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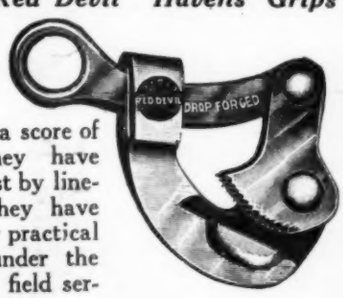

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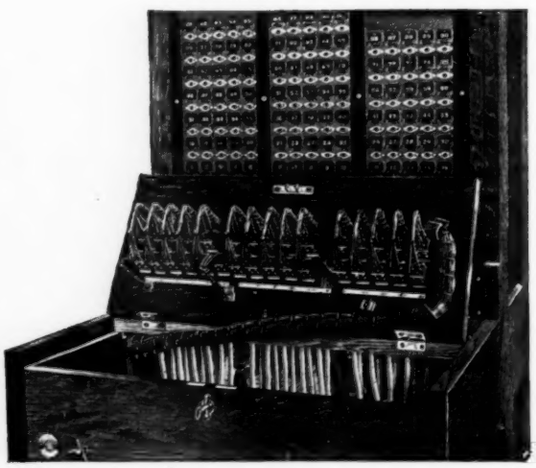

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Telephony.

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CURRENT OPINIONS AND COMMENTS

Evidence is not lacking these days that the stability of the telephone business is beginning to be recognized by financial experts. One observer of the security market, writing for a metropolitan paper, recently made this comment: "Public utility and telegraph and telephone bonds showed the greatest advances." Similar remarks are frequently made now in the financial news columns.

The plain deduction to be drawn from this is that traders and investors are waking up to the fact that there is no more safe, permanent business in the country today than the business of furnishing people with telephone service.

Another inference, equally logical, is that, regardless of spasms of public criticism here and there, the feeling exists that the business of rendering telephone service is being handled efficiently and as economically as the high standards demanded by the American public will permit.

* * * *

It is a tribute to the industry, and in the long run should crystallize into public opinion that will make it possible for telephone companies to finance their operations more easily than they are able to do now.

The day should soon come when they will not have to fight tooth and nail to obtain living rates, and it will arrive when the public concede the companies' need for capital to extend and improve service. When that time comes, rate commissions will do their duty more cheerfully and promptly, and the strain will be relaxed all around.

* * * *

One of the editors of Forbes, the business magazine, had an article in a recent issue entitled "Opportunities for Investors," which commented in a very approving fashion on the telephone industry. In explaining the high rating given telephone securities, the writer reviewed the events of the war period, and offered this statement:

"The telephone systems were taken over just as the railroads had been taken over, in order that the government might protect them, and that they, in turn, might give greater stability to the government by continuing to function.

"In their case the need was quite as pressing as it was with the railway systems. But the telephone systems have been able to get back to their old earning basis much more quickly than the rails, for the reason, first, that their business is more stable, and, second, that their labor costs, being subject to no outside control, are more easily adjustable."

* * * *

There will be disagreement with the statement that the telephone companies needed to be placed under government control as much as the railroads did, but it was a war measure and as such was loyally accepted.

Not a few companies embraced the opportunity to have their rates adjusted during federal operation, and many more should have done so. They would have, if they had followed the urgent advice given in these columns from time to time.

The Forbes analysis proceeds: "The earning power of telephone and telegraph companies, at least from the standpoint of gross earnings, is a very dependable quantity. In the office of the head of a big transcontinental wire system there is a large chart on the wall which depicts graphically the course of earnings by means of a black line on a cross-sectioned cardboard. Running back and forth through the black line is a broad red line which traces the course of general business.

"Both lines show growth, starting in at the lower left-hand corner and ending near the upper right-hand corner of the chart. But the impressive thing is the apparent indifference of the black line to the sharp ups and downs of the red line. And that was just what the diagram was meant to show."

* * * *

Reduced to plain English, this means that the chart proves that while general business has its ups and downs—and most decided ones, too—the wire business is not affected adversely to anywhere near the same degree.

* * * *

As the writer continues: "General business may take a severe slump and for a while earnings of the wire concerns will run horizontally, or curve gently downward; or business may take a spurt and they will turn more definitely up-

ward; but it all comes about in a leisurely way, strikingly indicative of the stability of their earning power.

"The explanation of this stability of earnings lies in the steady growth of the telephone systems, and the ever-increasing proportion of the population which is adopting the telephone as an everyday convenience. Wire communication is becoming a necessity in bad times as well as in good times; so that the wire concerns are becoming independent of the temporary ups and downs of the business barometer."

* * * *

The article concludes with the observation that "telephone companies have always been more favored by public service commissions than other utilities," which is considered as an additional reason why they occupy a more favorable position at this time. This statement will not be accepted altogether by telephone men in certain states where the public service commissions have withheld proper assistance.

At that, other utility managers have frequently made the same comment. No one, however, can truthfully assert that telephone companies have been unduly coddled by the commissions. What they have won in the way of additional compensation was certainly merited.

* * * *

The chart-makers and statisticians at Washington tell us that the cost of living is going down, and that commodity prices may drop still lower. Retailers at a convention which met in Chicago last week were advised by their speakers to reduce their prices if they wanted to increase their sales and speed the return of good business.

No one will deny that many retail dealers are asking too much for goods on which they should have taken a loss months ago—or rather been content to accept a smaller profit. At the same time the indications are, in several lines, that prices are not likely to go much lower, if any.

The telephone industry is one of these, and the operating companies which have been delaying their buying for spring construction, expecting lower prices, are likely to be disappointed. In fact, some think material prices are more likely to rise than fall.

The winter is nearly over, and the time for that spring work will be here before we realize it. The exchange manager who expects to do any buying for the jobs which will have to be done in April, May and June will make no mistake in placing his orders now.

* * * *

That was a well-deserved tribute which President Gallon paid to telephone workers in his annual address to the Wisconsin Telephone Association.

It is essentially human nature for everybody to magnify his own troubles, and think them more vexatious and harder to bear than the other fellow's, but, take them all around, 365 days a year, the men and women on the telephone company's payroll constitute as loyal, efficient and hard-working an army as can be found.

President Gallon says the devoted workers of the telephone companies have made a record for loyal service which cannot be surpassed—and he is right. Their spirit of co-operation has had a helpful influence with the general public and utility commissions, which has been often reflected to the company's advantage.

The wise manager will win the loyalty and good will of his fellow workers by friendly treatment and fair play, and they will help to establish the company on a friendly footing with the public. That policy will bear out the phrase, "United We Stand."

Wisconsin For Service Corporation

At Annual Convention of Wisconsin State Telephone Association Agitation Started For Incorporation of Service Organization—Interference, Safety Code, Construction, Depreciation, and Radio Important Topics of Discussion

By Stanley R. Edwards

Wisconsin telephone men have always been much interested in service. At the annual convention of the Wisconsin State Telephone Association, held at the Republican House in Milwaukee, February 14, 15 and 16, steps were taken looking to the incorporation of a service organization as a means of extending the association's work.

The 150 telephone men present at the Thursday morning meeting expressed themselves as very much in favor of an extension of the association's activities, when the matter of a larger budget was brought up by Secretary J. A. Pratt. An animated discussion resulted in the adoption of a motion authorizing the appointment of a committee to make concrete suggestions and instructing the board of directors to call a conference at Madison within the next 30 days to take some action on a service organization.

The terms of two directors expired this year and at the business session Thursday morning H. A. Price, of Markesan, and F. H. Runkel, of Portage, were elected. The board of directors at its organization meeting elected these officers:

President, Arthur Taylor, Rhinelander; vice-president, H. A. Price, Markesan; treasurer, W. F. Goodrich, La Crosse; and secretary, John A. Pratt, Madison.

The Opening Session.

Immediately after calling the convention to order, President Walter J. Gallon presented City Attorney John N. Nivens, who extended a most cordial welcome to the city.

W. L. Smith then told Mr. Nivens on behalf of the association members how much his words were appreciated.

The convention thus being formally opened, President Gallon presented his annual address discussing the conditions facing the Wisconsin telephone men. In the course of his address, Mr. Gallon said:

"Again we are assembled for our annual get-together meeting. The past year in business generally has been one which has thrown to the discard many industries that were built up, owing to extraordinary demands during war time. It is a question of the survival of the fittest.

We hear the cry all over that we are getting back to normalcy. What does that word normal mean? Is there such a thing? I believe I am safe in saying not one of us can apply the word in our industry. In my 20 years' experience in the industry, I have always been on the qui vive, wondering what was going to happen next.

Think of the evolution and tremendous

changes that have taken place since our association was organized a few years ago. Just when we thought we were settled, an unusual demand would be placed upon us, and the engineers and brains of the industry would immediately get busy and meet the issue. Show me a vocation or a calling like it anywhere on this great globe of ours.

My colleagues, we have reason to be proud that we are in the industry that we are. Without us, American business would be at a loss. Just imagine taking the telephone instrument out of the commercial field today. It is impossible to imagine a greater chaos.

Let us review for a few moments what our greatest problem is. I say without reservation, the greatest problem before us at the present time is our relation to the public or in other words, the public's attitude towards us. It is gratifying to know a great effort is being made to meet that issue.

I believe the greatest secret of success that can be attained along these lines is by getting our houses in order; by that I mean see that the employes have the right amiable feeling towards the employer. Happy employes, knowing that their employer has their interests at stake, will radiate that feeling to the patron with whom they come in contact.

In the traffic department, the operator must be schooled to understand and make allowances for the supposed harsh voice at the other end of the line. A careful study must be made by managers to bring about pleasant relations between the employes themselves so perfect teamwork can be had. The pleasing intonation with its many little courtesies given to the operator, is doing more to bring about a better feeling between the patron and the company than any other agent. Those wonderful words 'Please' and 'Thank you' are doing a great job for us in our traffic department.

In the plant department, there is a great possibility to help the cause along. Is it not only natural for a passer-by who notices the actions and appearance of the plant employes who are on maintenance and construction work? If these men show a spirit of good will toward one another and pleasant banter passes, what will the observer say? 'Their company must be all right; the employes seem mighty happy.' The same spirit should be radiated with installers and inside maintenance employes in the homes and business houses.

In the commercial department is where the psychology of human relationship should be studied more than ever. The average public unfortunately knows little of the tremendous costs that are involved in building up the machinery to transmit the human voice as it does. It is sometimes very hard for the commercial agent to explain to the person complaining about abnormal bills and such like.

A remarkable evolution, however, is taking place along these lines through the efforts of our publicity bureaus; and what is more important, the sincere cooperation between departments, with the result that the man or woman at the commercial desk is able to talk intelligently without getting too technical to the patron. What is the result? Right here in Wisconsin in rate cases, etc., we have found a great number of instances where absolutely no opposition was shown.

I believe it right at this time that a word of praise should go out to the workers in the telephone industry. This great United States of ours, never in its history, saw a more devoted lot of workers than those in the telephone industries. If we review for a moment or so, the labor conflicts that rend our land from coast to coast and from the Gulf to Canada, how very seldom it was that telephone organizations were brought into the limelight by such.

President W. J. Gallon Discussed Conditions Facing Wisconsin Telephone Men.

A more loyal set of workers have never been known and it is just in the last two years that the telephone employe has been put on a par with his fellow workers in other industries. It is certainly encouraging to know that the state commission is cognizant of that fact and is not listening to the cry of the political radicals who are trying to undermine the public utilities in this great land of ours.

Another item which is bringing about a change in our relation, is the passing of the man or group of men who have endeavored to manage telephone properties as a side issue. We have every reason to be thankful that our work is gradually getting down to a work of specialization more and more every day.

In our various conferences in the past year, much planning has been done to bring about a system whereby those in the smaller exchanges can enjoy the benefits of those who have specialized in the various departments of the telephone industries. It is my sincerest hope that at this convention the seed will be sown for a greater and better association so that every telephone company in the state of Wisconsin, be it large or small, will have at its command, department specialists who will further the great work along.

The men in the telephone industry in the United States of America are the leaders in this great effort of humanizing business relations, but we must not stop. We have not reached the goal as yet but we are well on our way."

Commercial Surveys.

A most interesting and instructive talk illustrated by charts followed President Gallon's address. "Commercial Surveys" was the subject of this talk by L. J. Fitzgerald, commercial engineer of the Wisconsin Telephone Co. Among other things Mr. Fitzgerald said:

"With the present low margin of return it is necessary to practice every possible economy and engineer our business, both from a construction and operating standpoint, so that waste of material and effort is cut to the minimum. This can be accomplished only by a careful study of the conditions that will obtain in the future, taking into consideration the growth or development of the business, the number of telephones to be served, the effect of increased or decreased expenses and revenue, the present and future rate level.

Commercial surveys are made for the purpose of determining the future demand for telephone service and the conditions as to rates and classifications under which the service is to be offered, which will determine the amount and type of plant required.

The demand for telephone service in any exchange depends upon the number, character and distribution of families, and upon the living conditions and earning power of the community.

Generally, commercial surveys are of two kinds—one used as a basis for a fundamental plan, the other as a basis for immediate facilities.

The commercial survey to be used as a basis for a fundamental plan is usually made to cover a period of from 15 to 20 years and is a more or less costly study, depending upon the conditions and requirements of the area in question, from the results of which, the size and location of future conduits and central offices can be determined, also the ultimate rates and the general operating policy.

The commercial survey to be used for additional plant facilities under existing rates and practices is a more simple operation covering a shorter period of time, usually from five to eight years.

While this talk was not intended to cover the commercial basis study for a fundamental plan, I am nevertheless going to outline briefly the methods used in making these surveys, because in the economical operation of a telephone ex-

Secretary Pratt Presented Plans for Extending Service Facilities of the Association.

change, a survey of this nature is necessary. The methods used in making these studies will vary slightly with the size of the exchange area and the varying conditions of different localities.

The estimates for any commercial survey must be made by someone who is thoroughly familiar with the past and existing conditions, and who also has the ability to estimate with a fair degree of accuracy, the future growth and character of the population within the territory covered by the survey; as on the accuracy of this estimate of population and distribution of families, depends the value of the results obtained.

In making a survey as the basis for a fundamental plan, it is necessary to determine the area to be included in the survey and prepare the necessary maps of suitable size. The study area is then divided into homogenious or market areas, which are again divided into smaller or house count sections, which will be used by field men in making the family count.

A count of the present families is then made and tabulated on the field sheets, by the rental value and types of dwelling —also subscribers and their class of service and non-subscribers; also vacant lots and buildings.

After this field work has been completed and summarized, showing the users and non-users by blocks, sections, market areas, and the study as a whole, the future population is estimated, and this estimated population distributed over the entire area down to house-count sections, by type of dwelling and rental value.

An appraisal of the service by classifications is then made and distributed over the territory by house-count sections. Line values are then given to each class of stations, and the stations interpolated into lines and the lines distributed over the entire area, down to blocks, by business, residence, P. B. X. trunk, power and battery circuits.

A map is then made, showing the distribution of these lines by blocks, which is turned over to the plant engineer, or whoever is designated to work up the fundamental plan. From this map, the engineer will determine the economical location of central offices and the ultimate conduit lay-out, so that as each addition to the plant is made in the future, it will be a part or unit of a predetermined, comprehensive plan.

This description of the making of a commercial basis study for a fundamental plan has been general and very brief. The actual time required for a study of this nature for a city the size of Milwaukee, would be approximately 18 months.

A commercial survey—sometimes termed a development study—for additional plant facilities, is usually made to cover a period from five to eight years, and is a different proposition, both in the results obtained and time and expense required to complete it. These studies are made to determine the amount, kind and location of additional facilities for an exchange or any part thereof, under existing conditions, or for the reconstruction of existing plant, so that the new reconstructed plant will be placed as economically as possible.

These studies provide a plan whereby the new or replaced plant will not be over or underestimated. The folly of erecting plant that will have to be replaced within a short period of time on account of its inadequacy, is obvious; likewise the replacing of plant upon which the annual charges on the amount of spare or idle plant are heavy, is equally unbusinesslike.

For an example, if there is a demand for service in a certain territory in which the facilities are congested, it would be waste of good money to place facilities to take care of the present demand for service, if within the period of five or so years, the facilities will have to be replaced or augmented with additional plant. On the other hand, if facilities were placed in this territory, of which only about 50 per cent would be used in the period of five or ten years, the annual charges on the idle plant would be a burden, which would ultimately have to be borne by the subscribers in their general rate level.

This applies to rural territory as well as the territory within the exchange base rate area. If there were a demand for six or seven subscribers in a certain rural territory and without making a study of future needs, a light bracket lead was built, where the demand for service in the future would require a pole lead substantial enough to carry one or more cross arms, the cost of erecting and removing the bracket lead and erecting the required pole lead, would be evident waste.

There is probably not one among you who has not had the experience of erecting plant which has become obsolete through its inadequacy to care for the demand for service, or which has become a burden to the exchange on account of the idle plant. These conditions can be narrowed down to a very small margin if a proper study is made to determine the amount of plant that will be required within a reasonable period or within the life of the plant to be erected. These studies are not highly technical nor complicated, and can be made with a fair degree of accuracy by any of you in the field, as all it requires is a good map of the territory, a little time and common sense.

The first thing to do is to determine the area to be included in the study, preparing a map of sufficient scale to allow placing all the information desired without undue crowding—200 feet to the inch is a good scale to use. This map should show the streets, blocks, alleys, rivers, bridges, etc.

Next data should be gathered and tabu-

F. H. Runkel, Re-elected Director, Has Been an Active Association Worker for Years.

lated showing the growth in population for the past 10 or 20 years, for the city as a whole, by wards and by enumeration districts. This information can be obtained in any public library or from the

United States Bureau of the Census, at Washington, D. C.

In the smaller cities and villages a study of the entire community is preferable as it is hard to estimate the future in small sections on account of the lack of accurate knowledge of past growth.

The enumeration districts as noted are arbitrary sections or districts used for convenience in taking the census. By laying out these districts and tabulating the population, a comparison of growth of smaller sections can be obtained, and it is easier to project the probable future growth on the basis of past growth. This projection must, of course, be always tempered with the knowledge of the man making the study, as some one factor may have had an influence which would cause an abnormal growth in a section during a past decade that would not hold true for the future; likewise some factor may have caused a decrease in a section, such as the encroachment of business or the removal of an industrial plant to some other location in the city or to some other city.

Great care should be used in estimating and distributing future population, but with the aid of statistics of past growth and a good knowledge of local conditions, very good estimates of population growth can ordinarily be made.

From the estimated population is then determined the total amount of service in stations that will be required for the three, five or eight-year period or for whatever period is used, this estimate to be made by classes of service, and will be used as a check in the final field estimate. Unless there is to be a radical change in the rate and classes of service offered, it is best to assume that the percentage of each class of service to the total number of stations in service at the end of the period will be about the same as at present. However, the classes usually increase slightly on account of the general desire for better service, brought about by education and habit.

The next step is to spot the present service, in exact location on the map, by classes of service. This can be done in several ways, but the most convenient is to use a code in colors, for instance have 0, 2, 4 of one color represent the 1, 2 and 4-party business, and 0, 2, 4 of another color represent the 1, 2 and 4-party residence service. Good colors to use are red for business and yellow for residence.

The survey is now ready for the estimated future stations, which work should be done in the field by a careful study of every block. These should be spotted in another code such as black *X, Y, Z* for 1, 2 and 4-party business and blue *a, b, c* for 1, 2 and 4-party residence.

As each block is studied, areas which appear will be unavailable within the life of the study should be so noted—such as school houses, play grounds, parks, railroad yards, ravines, bluffs or other areas in which no growth is expected.

In doing the field work, prospects should be spotted more on the basis of

W. F. Goodrich, Treasurer for Many Years Was Re-elected to That Office.

the general appearance of the block as a whole, the types of families and their ability to have service rather than on any local knowledge, as to their actual stated needs for service, as the man who claims he has no use for service today may be insisting on service tomorrow. It is a good plan in assigning service to compare the present non-users with the present users and assign service accordingly, block by block.

Consideration must also be given to vacant lots and blocks, especially on the outskirts of the present built-up territory, or a rapidly-growing community. An easy place to go wrong is the downtown business section, the tendency there being to underestimate rather than overestimate. About 10 per cent increase should be allowed in blocks that are saturated today to take care of moves and changes.

After the field work has been completed, the stations should be counted and summarized according to classifications and then checked against the estimate of total growth as previously made, as unless there is something abnormal, it is a safe check to assume the future growth in stations in an exchange will follow closely the growth in the past; for instance, if the average growth in an exchange has been 30 stations per year for the past five years, it would require very strong reasons to substantiate a total future growth for five years of 225 stations, providing the rates and practices remained the same. The future growth is also controlled by the development today, for the nearer the approach to the point of saturation, the slower the growth.

A good check is to make a picture of the past and expected development by plotting a curve of the population and stations for years past and producing the average growth to the end of the period desired in the study.

Having determined the growth and its distribution according to classes of service, the station values are changed into line values by multiplying the number of stations in each class of service in each block by a line value, or factor. A single party line takes a value of one, but two and four-party stations take different values for different exchanges, according to the present or average line fill. A good figure to use is 0.6 per cent line on two-party and 0.33 per cent line on four-party service.

The present and estimated increase in lines per block are then shown on another map. From this map, group the present and proposed lines in the area served by the present leads, which will determine the size of cable or number of additional pairs needed to serve the territory. The lines in each block and the location of the present stations will determine the size of the laterals and the size and location of the terminals in each block.

While the making of a study of this kind requires some time and expense, the results in dollars saved, in original outlay in plant and subsequent rearrangement and maintenance, will amply compensate for the effort and money expended."

There was some discussion of various points brought out by Mr. Fitzgerald after which the first day's session was brought to a close.

The Wednesday Morning Session.

The Wednesday morning session was devoted to a discussion of the proposed electrical safety code, which will be considered at a public hearing March 1 and 2 at Madison before the Wisconsin Railroad Commission.

C. B. Hayden, of the service department of the Wisconsin Railroad Commission, discussed the proposed code at length, taking it up section by section.

The universal application of this code, which will soon become compulsory, will safeguard the telephone companies and minimize the dangers that confront the workers because of laxity in regard to the basic principles of safety, Mr. Hayden declared.

F. H. Runkel, of Portage, in discussing the code, mentioned several points in it with which he did not agree with the others of the committee that drew up the code. He referred particularly to the crossing requirements and the use of copper clad wire.

Mr. Runkel advocated that the code be given a very careful study and points that the companies believed objectionable noted

and brought up at the hearing at Madison next month.

President Gallon announced that two directors were to be elected by the convention. Upon motion, the chair was authorized to appoint a committee of three to suggest nominations for the vacancies. After a few announcements the session adjourned.

The Wednesday Afternoon Meeting.

Upon calling the meeting to order on Wednesday afternoon, President Gallon announced the nominating committee as consisting of A. H. Bowden, of Almond; Charles Blair, of Boscobel; and J. L. Farrington, of Rio.

Dr. W. J. Canada, of New York, electrical engineer of the National Electrical Light Association, was then presented by President Gallon to speak upon the subject of inductive interference from the standpoint of power companies. Dr. Canada at the outset said his topic would be "Co-ordination." He stated that great progress had been made in co-ordinated work as evidence of which he referred to the National Electrical Safety Code. In co-ordination, each one must have a certain part to play and each must do his part.

Referring to signal and supply systems, Dr. Canada pointed out that they have two outstanding features—both are public utilities; and services are so interrelated that changes in one react upon the other. The speaker said that power and signal companies are agreeing better than ever before but that real co-ordination will never be accomplished if it is let to the local companies. Co-operation will be effective if each set of equipments conform to co-ordinated standards. The absence of one utility from the highways does not release the utility on the highway from conforming to these standards.

Dr. Canada declared that "inductive co-ordination" should be discussed and not "inductive interference."

Interference as now understood is such interaction between two sets of facilities as to interfere with the action of the other. It involves defining what is satisfactory service, after which discussion can be had as to the amount of re-action.

"Co-ordination," said Dr. Canada, "is a balancing of facilities so that the public may obtain what it considers satisfactory service. Both must meet the public needs. As soon as general principles of co-ordination can be decided, their adoption will be welcome and more details based upon these general principles will simplify matters."

Dr. Canada then outlined the manner in which the electric light and telephone committees are working to get results. He stated that surveys are being made and it is hoped that a general preliminary report will soon be made.

F. H. Runkel, of Portage, pointed out that metallic telephone circuits properly transposed, insulated, and balanced are the last word in construction. Grounded lines, he stated, are made worthless by power companies coming in near them. He predicted that eventually every rural road will have a power transmission line on it with the telephone line and advocated that the telephone men work with the companies to help make life easier on the farm.

Mr. Runkel told of efforts the association officials had made to co-operate with the electrical interests in Wisconsin, but without success.

J. N. Cadby, of Madison, representing the Wisconsin Electrical Association, said that the power companies are not anxious to have losses and entered the plea: "Don't blame all the electrical companies just because one foreman is a bonehead." He declared that the grounded telephone lines are out of date and that the power companies should not be held up for all costs.

Dr. Canada stated that the electrical and telephone companies should have been getting together ten years ago instead of waiting until in the midst of inductive interference. He said that it was impossible to get the harmonics out of the line but that they possibly can be taken out of the generator.

Roy Wheeler, of the engineering department of the Wisconsin Telephone Co., pointed out that the telephone business was built up before the power industry developed or extended its services. The telephone was first in the field and the lines were built according to the best knowledge the telephone men had at the time. He pointed out that as soon as an electric line comes into a community, the factor of safety is reduced and maintenance has to be better. The influence of the telephone lines on power service is not detrimental but the influence of the power lines on the telephone service is.

J. M. Storkerson, of La Crosse, Believes Underground the Only Economical and Efficient Place for Cable.

"To accomplish the best results," said Mr. Wheeler, "get together with the electrical people and work out routes and methods. Clear your lines of tree and other grounds. The telephone line is the best detector of trouble there is on power lines, so when you find trouble of that kind, tell the power company of it. Both companies must work together as the public must have both services. Work out the problem together."

H. A. Price, of Markesan, told of his experience with the power lines. The engineer of the power company came to him and worked out plans so that there is but little interference.

He took issue with Mr. Cadby as to the grounded systems and related how the president of a village had taken up the matter of rebuilding the telephone lines with a doubling of the rates when the power company wanted to come in. The village refused to let the power company come in until provision was made so that the service on the grounded lines would not be disturbed. Several other speakers upheld the grounded line system as being entitled to consideration.

C. B. Hayden, of Madison, stated that the railroad commission had no power except when inductive trouble has occurred. He declared that the commission feels that the grounded telephone lines are important facilities and in only two cases has ruled against them.

After some further discussion, President Gallon presented F. B. MacKinnon, of Washington, D. C., president of the United States Independent Telephone Association, who spoke briefly owing to having to make a train.

Mr. MacKinnon declared that the question of inductive interference must be settled quickly, either by co-operation or by a fight in the courts. He told of plans of thrashing out the plans at the various state conventions and then afterward to have a meeting of the officials of the state associations in Chicago to thrash out a policy to be followed.

"Decide on the rules of the game and then play it fast," said President MacKinnon in closing.

"Proper Methods of Construction" was the subject of a practical talk by O. A. Blackwood, of Elkhorn, manager of the States Long Distance Telephone Co. Mr. Blackwood told of the methods of 24 years ago and contrasted them with today's methods. Today specifications and drawings are easy to obtain and we have the best of standard material, but many managers are wasting it as the lines are not up in the air as they should be.

"The manager," said Mr. Blackwood,

(*Now turn to page* 33)

Relation of Public and Utility

The Public and Utility Used to Deal with One Another Directly — Now Conditions Have Been Greatly Changed by Public Regulation — Extracts from Circular 112, Telephone Service, Issued by U. S. Bureau of Standards

Public relations as here treated include all the various subjects in connection with which the public may be brought into relation with the utility.

Before the advent of public regulation, the public and the utility of necessity dealt with one another directly, except when recourse was had to the courts. Since the coming of regulation, however, many of the relations involving the subscribers as a whole have been largely taken care of by the commissions, while the direct relations concerning contracts, collections, complaints, etc., have become considerably simplified through the introduction of more nearly uniform company practices. Various national and state telephone associations have contributed to this end.

Differences relating to such matters which cannot be satisfactorily adjusted by mutual agreement between the company and its patrons, and which may also affect subscribers in general, are often submitted to regulatory commissions for settlement. Because public utility laws and commission rulings at the present time so largely define and control public relations, the subject may perhaps best be treated here by an outline of the nature and scope of regulation.

1. The Need for Regulation.

Before the day of regulation the frequent disregard of the public interest by utility corporations and instances of vindictive reprisals on the part of the public led to the recognition of the necessity of something being done to protect the public and at the same time insure fair treatment to the utility.

The chief reasons leading to the adoption of the principle of public utility regulation may be briefly summarized as follows:

(a) The individual himself is unable or cannot economically and advantageously furnish for his own use various classes of service found essential in the life of a modern community.

(b) The furnishing of such services to meet the common needs of the community, if not undertaken as a community enterprise, must be entrusted to private business organizations.

(c) The recognition that competition in this field generally results in economic waste, the cost of which is eventually and almost invariably borne by the public, eliminates an important form of control found effective in other lines of business. In the absence of competition, public utility enterprises may, therefore, be regarded as monopolies, and, indeed, some courts have declared them to be "natural monopolies."

(d) Such undertakings require for the conduct of their business certain quasi-governmental powers which must be conferred on them by state or municipal authority, such as the right of eminent domain, enabling them to acquire by condemnation proceedings, property, including right of way, necessary for the conduct of their business.

(e) They must also be given the right to use highways, streets, alleys, etc., which have been dedicated to public use.

(f) The utility must supply its services to the public in general without discrimination.

2. The Legality of Public Regulation.

For these and other reasons the public utility business has been held to be peculiarly affected with the public interest, and therefore subject to the police power of the several states of the United States.

The United States Supreme Court has held that police powers are "nothing more or less than the powers of government inherent in every sovereignty to govern men and things"; that they include "everything essential to the public safety" and extend "to all of the great public needs"; and has repeatedly asserted that private property, devoted to public use, is "clothed with public interest," and is, therefore, subject to public regulation.

The validity of the commission form of control, which was attacked on the ground that utility commissions are simultaneously granted legislative, executive, and judicial power has also been upheld by the United States Supreme Court, which has stated that "there can be no doubt of the general power of the state to regulate, and this regulation can be carried on by means of a commission." Also that "such a commission is merely an administrative board created by the state for carrying into effect the will of the state as expressed by its legislation."

These questions can, therefore, now be regarded as having been definitely removed from the realm of legal controversy. Utilities in general no longer contest the principle of regulation nor the commission form of control. In fact, almost without exception, they express themselves as being committed in principle to both.

Public utility regulation exists in three forms—federal, state, and local or municipal. Municipal regulation has largely been superseded by state regulation and will, therefore, not be discussed.

3. Federal Regulation.

The United States government has confined its public utility regulation to interstate carriers, broadly interpreted to include not only railroads, but also express, telephone, telegraph, and pipe-line companies engaged in interstate business.

Because practically all telephone companies at times handle, over their lines, long-distance business across state borders, it has been held by the Interstate Commerce Commission that such companies are interstate carriers and are therefore subject to its jurisdiction. The commission, however, has thus far merely required telephone and telegraph companies to adopt a prescribed system of accounting, to file annual reports, and to furnish certain cost data.

4. State Regulation in General.

Practically all of the states now have laws relating to the regulation of public utilities and have created commissions charged with their administration. Congress, which legislates for the District of Columbia, enacted a public-utility law for the district in 1913.

The earliest utility laws in the United States related primarily to railroads,

TELEPHONE SERVICE.

Telephone service is to a great extent occupying the minds of telephone men throughout the country. Perhaps a no more thorough discussion of the subject could be obtained than from Circular No. 112 which was recently issued by the U. S. Bureau of Standards.

This Circular was published as the result of several years' study and preparation by the bureau experts.

Service in general is considered in the introductory section while descriptions of the telephone plant and its operation are given in sections which respectively consider developments of the telephone art, equipment of manual systems, outside line construction and telephone traffic. These are followed by the section, from which the extract on these pages is taken, on the principal elements of telephone service.

In short, this work is worthy of the attention of those in the telephone field to whom "service" is a vital and interesting problem.

Copies may be obtained from the Superintendent of Documents, Washington, D. C., at 65 cents per copy.

though carriers by water were often included, and the commissions, generally designated as railroad commissions, which were created to carry out the laws, had at first only advisory and publicity powers.

Through subsequent amendment and additional legislation the scope of the laws and the jurisdiction of commissions have been greatly extended in consequence of the wider recognition of the vital public interests involved. Other enterprises organized to furnish the public many other kinds of service, such as gas, water, electric light and power, central heating, telephone and telegraph, express, and even dock and warehouse service, have been declared to be public utilities and placed under commission control, though the scope and the extent of this control varies greatly from state to state.

Although in some of the states the regulatory commission still bears the title, "railroad commission," or "board of railroad commissioners," in most of them the commission is known either as "the public utilities commission," "public service commission," or "corporation commission." Those states having no railroad commission at the time of adoption of general public utility laws, naturally created commissions having general jurisdiction over most, if not all, generally recognized public utilities.

The laws of the several states and of the District of Columbia are not uniform either as to scope or intent, and the powers vested in the several commissions differ greatly.

In general, the various state laws, besides prescribing the organization of the commission, the qualifications of the commissioners, the manner of their appointment, their term of office and compensation, and other matters pertinent to the commission itself, define in detail its jurisdiction and powers. The laws also generally define a number of commonly used terms, upon the correct interpretation of which the intent of the laws depends. Among the terms thus defined are "commission," "public utility," "corporation," "common carrier," "telephone utility," "telephone plant," "service," etc.

5. State Regulation of Telephone Utilities.

As applied to telephone utilities the general purpose of these laws is to assure the public, without discrimination, reasonably satisfactory, safe and adequate service at reasonable rates, and to assure the utility a "fair return" on the "fair value" of its property, in use and useful, for the rendition of the service. The laws differ principally in the extent to which specific provisions are incorporated for accomplishing the purposes sought.

Public Convenience and Necessity.

To prevent further destructive competition resulting in injury to the public interest, many states have incorporated in their utilities laws provisions requiring telephone companies to secure from the state commission certificates of public convenience and necessity before beginning the construction of new plants or systems or exercising any franchise right that may have been granted them. In several states a certificate of public convenience and necessity is a prerequisite to the granting of a franchise.

In either case, a company seeking a certificate must prove to the satisfaction of the commission that there is a real need for the proposed new service and that the public convenience and necessity will be served thereby. Certificates of public convenience and necessity are, in general, not required of companies for mere extensions of their systems within the city or community served, nor into contiguous territory not served by another company.

Service Regulation.

Most of the state utility laws contain provisions authorizing or directing the commission to determine, fix, and prescribe just, reasonable, and adequate service. Thus far, however, only two states —Wisconsin and Illinois—have undertaken to establish even tentative rules governing telephone service in general. These provide for:

(a) Standards of Construction.—The standards of construction which have been adopted usually follow the Bureau of Standards National Electrical Safety Code. These were drawn up primarily to reduce to a reasonable minimum hazards to life, limb, and property, special stress being laid on the necessity of guarding communication wires from contact with or influence by power lines at crossings or when carried on the same poles, and also to protect employes who make repairs. This requires a character of construction which, at the same time, may be said to satisfy the requirements of good engineering practice.

Besides Wisconsin and Illinois, a number of other states, including California, Pennsylvania, Kansas, Nebraska, Iowa, Arizona, Washington, Nevada, Montana, Utah, North Dakota, Connecticut, and Idaho, have adopted rules for overhead line construction.

The California commission has made a detailed investigation of the disturbing effects produced on telephone lines by electric power lines, and as a result of its findings has prescribed rules to reduce these effects to a minimum. Among other states having rules on inductive interference are Iowa, Illinois, Nebraska, and Nevada.

(b) Maintenance of Plant.—The state laws generally require that provision be made for the proper upkeep and repair of the plant, including such inspections and tests as may be required for detecting trouble and incipient trouble.

The objects of this provision are: (1) To assure the public of a reasonably uniform grade of service comparable with that afforded by the plant when maintained in a condition of normal operating efficiency. Under such conditions service interruptions resulting from plant failure, as well as cross-talk and noise, are reduced to a minimum.

(2) To assure the employes, subscribers, and the general public reasonable freedom from hazards incident to the development of faulty conditions of the telephone plant.

(c) Adequacy of Service.—(1) Through provision of sufficient switchboard capacity and sufficient operating force to handle the traffic at all times with reasonable facility.

(2) Through limitation of the number of subscribers served by a multiparty line.

(3) Through limitation of the use of toll lines to toll purposes only, except where the traffic is so light that a small number of subscriber stations may also be served.

(d) Dependability of Service.—Through the adoption of reasonable provisions against failure of lighting or power circuits, damage by fire or storm, and against other emergencies, such as sudden increase in traffic or illness of operators, which might seriously impair the service if not properly met.

(e) Speed Requirements.—Through prescribing reasonable requirements as to the speed with which calls are to be answered, the size of the exchange and other pertinent factors being taken into consideration.

(f) Standard Operating Practices.—Through adoption of requirements covering phraseology and methods to be employed by operators to facilitate the handling of traffic.

(g) Handling of Complaints and Irregularities.—Through requirements relating to the recording of complaints and irregularities in service, their nature, duration, and final disposition.

(h) Publication of Directories.—Through provisions regarding the publication and revision of directories for large and small companies, including the character and scope of special information which should be included for the benefit of the public.

Plant Extensions.

Most state commissions have been given jurisdiction over extensions of existing telephone systems and are either authorized or directed, after hearings, to order telephone companies to make such additions and extensions to plant as shall be reasonably necessary for public convenience and adequacy of service, and at the same time shall not be unjustly burdensome to the public utility.

The commissions may fix the manner in which such extensions are to be made and may also specify the time of their

completion. In some instances, municipalities may control extensions within their boundaries, subject to review by the state commission. Franchise stipulations are, however, the controlling factors.

Abandonment of Service.

Few of the utility laws have provisions relating specifically to the abandonment of established telephone service.

Some of the commissions have exercised their authority to forbid such abandonment by virtue of the fact that they may require adequate service and full compliance with franchise terms. In other states in which this authority has been questioned, the enactment of necessary supplementary legislation has been recommended.

Physical Connection.

Most state utility laws recognize the necessity of control over the physical connection of the lines of one telephone company with those of another company. Subscribers and patrons of the one company may desire connection with subscribers of another company, or the company itself may desire the connection of its lines with those of another company to increase the value of the service.

In general, commissions may require such physical connections if it is shown in hearings held on application or on their own motion, that such connections are necessary to serve the public convenience. Most commissions limit physical connections to lines of companies serving different communities and not in local competition. Such laws either specifically or by implication also give the commission the power to fix just and reasonable terms and conditions of physical connections and just and reasonable charges to the public for the use of the same.

Accounting.

Many of the individual states, following the Interstate Commerce Commission, have recognized that efficient supervision and publicity of accounts are essential to the proper regulation of telephone utilities.

The Interstate Commerce Commission has prescribed uniform systems of accounts for telephone utilities doing interstate business, and in so doing has recognized the wide difference in the accounting requirements arising from differences in volume of business by dividing them into four classes according to the average amount of their gross annual operating revenues. The companies are classified as follows:

Class A.—Companies having average annual operating revenues exceeding $250,000.

Class B.—Companies having average annual operating revenues exceeding $50,000, but not more than $250,000.

Class C.—Companies having average annual operating revenues exceeding $10,000, but not more than $50,000; and

Class D.—Companies having average annual operating revenues of $10,000 and less.

The commission has prescribed standard forms of accounts to be kept by companies of classes A, B, and C. The use of other forms of accounts is prohibited. No forms have as yet been prescribed for class D companies, although the commission has suggested a form of bookkeeping for their use.

The forms prescribed for classes A, B, and C differ principally in that the larger the operating income, the more detailed the form of accounting prescribed. The smaller companies may, if they so desire, keep the more extended accounts prescribed for the larger companies.

Among the accounts prescribed by the Interstate Commerce Commission may be mentioned the following:

(a) Fixed capital account, or account showing the original fixed capital, together with the costs of additions, betterments, and replacements. The Interstate Commerce Commission defines the term "fixed capital" as "the property, both tangible and intangible, which is devoted to the accomplishment of the principal purpose of its business, and which has an expectation of life in service of more than one year from the date of installation in service (exception being made in the case of hand tools and other small portable tools that may be lost or stolen)."

(b) Operating revenue account, or account showing all moneys received or entitled to be received for services rendered or as a return on property used by the company in its own operations. Separate accounts are provided for exchange-service revenues, toll-service revenues, and miscellaneous revenues.

(c) Operating expense account, subdivided into maintenance, traffic, commercial, and miscellaneous expenses incidental to the rendering of the service and the proper maintenance of the plant and equipment.

Practically all state utilities commissions are empowered to classify the telephone companies under their jurisdiction, to prescribe a uniform system of accounts for each class, and to adopt forms according to which such accounts are to be kept. Generally speaking, the state commissions have followed the Interstate Commerce Commission, both as to the classification of telephone companies and as to the accounting forms prescribed. Many of the state commissions have prescribed accounting forms of their own for class D companies, no Interstate Commerce Commission forms having been adopted.

Valuation.

Most state commissions have been authorized or directed to make valuations of all public utilities under their jurisdiction, either specifically or by having been given control over rates.

Considerable valuation work has been undertaken in accordance with specific provisions of the respective state laws. To date, however, most of the work has arisen in connection with individual rate cases submitted to commissions or taken up on their own initiative. Valuations by state commissions are also made for control of the issuance of securities, when such jurisdiction exists, as a basis for purchase and sale and for other purposes. Municipal authorities may make valuations of privately owned utilities, in order to fix the basis on which taxes are to be levied.

The valuation placed on a utility and the method of making the valuation depend, in part at least, on the purpose for which it is made. State utility laws in general provide that the valuation made shall be "fair" to both the public and the utility. This permits the commission to take into account all factors judged to have a proper bearing on the case, some of which may be peculiar to the particular utility.

In general, the first determination of a "fair" value as a basis for rate regulation presents great difficulties, frequently because of inadequate records and accounts pertaining to earlier transactions of the utility.

No uniformity of procedure in valuation work has been established, but it may be said that in general a commission is required to take into consideration all the numerous factors bearing on the value of the property under appraisal. Factors to be considered in valuations are the historical cost of the utility, the reproduction cost new and the reproduction cost less depreciation. These are ascertained as far as possible as of the date for which the valuation is sought.

The historical cost is the total amount of money which has actually been expended in building up the utility as a going concern, including the costs of the original physical plant and the net additions thereto, engineering costs, interest, taxes, and insurance during construction, as also franchise, organization, and promotion costs. Determination of historical cost presupposes an intimate knowledge of the financial history of the utility and an accurate inventory of its property, tangible and intangible.

In many cases, on account of the manner in which the books and records have been kept, or on account of the fact that such books and records are no longer in existence, it is impossible to ascertain the true historical cost. Since it has to be left out of consideration in so many cases, less weight is attached to it than would otherwise have been the case.

The cost of reproduction new has in most instances been estimated as of a particular date, often the date on which a prescribed uniform system of accounts was put into effect, a period of time usually based on all available data bear-

WIRELESS TELEPHONY
MARKETS AND NEWS
TELEPHONE EX
CEMENTING CORDIAL RELATIONS
MARKETS AND NEWS RELAYED FARMER
FARMER
BREAKING THE CAMEL'S BACK
TAXES
PUBLIC UTILITIES
YOUNG MAN YOU MUST BEAR PART OF IT
US
TAX FREE SECURITIES
YOU SET AN AWFUL PACE, SAM
TELEPHONE EFFICIENCY HIGHWAY
JOHN BULL
FRED'S BUSY TIME
FRED MACKINNON
WANT TO TALK WITH YOU ABOUT THE DEPRESSION
LETS TALK ABOUT PROPOSED UTILITY LEGISLATION
US CONGRESS
INTERSTATE COMMERCE COMMISSION
SPEECH
STATE CONVENTION DATES
TELEPHONE SERVICE BUSINESS
THE HEART OF THE BUSINESS
TELEPHONY

ing on the time required to reproduce the property under valuation in one complete job, being assumed for the reconstruction.

The determination of the reproduction cost involves a complete inventory of the physical property of the utility used and useful in the conduct of its business, including, in the case of telephone utilities, right of way, land, buildings, central office equipment, station apparatus, private branch exchanges, pole lines, conduits, overhead and underground wires and cables, office furniture and fixtures, general stores, tools, implements, teams, motor vehicles, etc.

To determine the cost of reproduction new, unit costs are applied to each inventory item. The unit costs are based on the best available data and are intended to represent a fair average cost covering the total range of market prices for the period of reconstruction assumed. Among other factors which must be given consideration are general labor conditions, wages and salaries, transportation costs, and subsistence charges.

To make the reproduction cost estimate complete there must be added to the reproduction cost of the physical property certain other items. Some of these are organization and promotion, preliminary engineering, interest during construction, taxes and insurance during construction, omissions and contingencies, and working capital. Going value is also given consideration.

The depreciated reproduction cost is the reproduction cost new less the accrued depreciation, preferably determined by inspection of the physical condition of the property but sometimes estimated from the age and average life of the plant elements.

The reports of the commission's engineers and of the engineers of the utility are presented and considered in public hearings. After verifying all the evidence submitted, the commission arrives at a "fair" value of the property, tangible and intangible. This value is binding unless set aside by court decision.

Many of the commissions are required to make revaluations when deemed necessary. The work connected with revaluations of telephone utilities is naturally much less difficult than that involved in a first valuation because uniform systems of accounts are now in general use.

Rates.

Public utility laws in general authorize or direct the commission to determine and fix such rates and charges for utility service as shall be "just," "reasonable," and "sufficient." They also provide that rates be non-discriminatory as between customers, subscribers, or patrons of the same class and as between those belonging to different classes.

The question as to what is a "just," "reasonable," and "sufficient" rate of return cannot be exactly defined for general application, and indeed is difficult to answer even in a specific case. The wording of public utility laws, probably for this reason, intentionally admits of a wide range of interpretation. The matter of "just" rates, like "fair" value, is left to the discretion of the commission and each case is governed by conditions peculiar to itself.

Generally speaking, however, the rates as a whole are so fixed that the net operating revenue, left after deducting from the gross operating revenue all expenses recognized as proper, will be "sufficient" to yield a "just" and "reasonable" return on the "fair" value defined above.

Rate regulation is therefore based on the following:

(a) The basic valuation of the property, tangible and intangible, used and useful in supplying service;

(b) On that rate of return determinned by the commission to be "just," "reasonable," and "sufficient";

(c) On the estimated cost of supplying the service based on actual costs in the past, allowance being made for changes in cost. It is obvious that the total cost of supplying the service, together with the return on investment, must be met by service charges.

Among the recognized legitimate expense items is an annual depreciation allowance designed to provide for the replacement of plant elements, excepting small short-lived elements, by new plant, when, on account of wear and tear, inadequacy or obsolescence from any cause, such elements have served their useful life.

The depreciation allowance is based on proper and adequate rates of depreciation as determined by experience for each class of property and are such as will provide the amount required over and above the expense of current maintenance to keep the property as a whole in a state of normal operating efficiency.

Rate Schedules.

The fixing of non-discriminatory rates for different classes of service presents very great difficulties. Unlike the water company, the gas company, and most other public utilities, the telephone company is called upon to supply many classes of local service as well as toll and long distance service.

Rate schedules cover all classes of service sold and the charge fixed by the utility for each class is largely governed by the average cost of rendering that particular service. The general principles underlying the rates for the various classes of service are set forth in the following paragraphs:

(a) Toll and Local Rates.—Rates may be divided into two general classes, one covering toll service and the other covering local service. Toll rates generally are on a cost per call basis, involve the actual distance and the duration of the connection, and a charge is made for each completed call. In certain cases uncompleted calls also involve charges. Local rates are based on the average distance and duration. Charges are not always made per call and no charge is made for uncompleted calls.

(b) Public and Subscriber Local Rates.—Local rates for public or semi-public telephone service do not vary with the number of completed calls; the charge is uniform to all users. The rate per call may, however, be greater at a privately attended telephone having no coin collector than at other public telephones. Local subscriber rates vary in a general way with the amount, extent, and grade of the service rendered.

The total cost of rendering service to a particular subscriber naturally increases with the amount of service rendered, but the cost per call generally decreases as the number of calls increases. The cost of rendering service increases with the size of the local area and with the telephonic density in that area. As a community grows, the size of the local-service area and its telephonic density both increase. Furthermore, the service demands become exacting. Local rates therefore vary with the size of the community.

(c) Business and Residence Flat Rates.—Where service is sold on flat rates, the price or prices are naturally based on average usage. This varies widely between business subscribers and residence subscribers.

Where flat rates exclusively obtain, it is, therefore, usual to charge a higher rate for business service than for residence service. As a further basis for a rate differential, it is held that telephone service has a greater value for business purposes, and is, therefore, worth more, and that residence service adds to its value, being a business feeder as well as a convenience to the business man.

(d) Message Rates.—Message-rate service is always sold with a fixed minimum charge, for which a specific number of messages is allowed, plus specific excess charges for calls in excess of those allowed for the minimum charge. In many cases the excess rate for specific messages is uniform, regardless of the number of messages used. In other cases, the excess rate varies, decreasing at certain points in the scale of message use.

In some cases, all messages above the minimum number and below a fixed number (the highest given) are divided into blocks which may or may not be uniform as to number. Each successive block of messages has a lower rate per message. All messages above the highest scheduled number have a fixed rate.

In general, the minimum rate for

party-line service is less than for individual-line service, and that on four-party lines is less than that on two-party lines; the minimum number of messages may also vary in the same manner.

(e) Individual and Party-line Rates.—As rates always involve costs, and as costs vary as the amount of the plant and operating facilities provided vary, it follows that rates may decrease as the number of stations per line increases, but as the number of stations per line increases, the amount of service allowable per station and the grade of service both decrease. Hence there is a practical limit to the number of stations placed on party lines which varies with the needs of different communities.

Large cities do have two and four-party-line service, but in very large cities party-line service is not sold at all in the congested areas. Eight or 10 party-line, or multi-party line service, as it is frequently called, is more or less limited to suburban sections. Lines having more than 10 stations are generally classed as rural lines, and the number of stations per line often exceeds 15.

(f) Private Branch Exchange Rates.—Private branch exchange service requires switching equipment on subscriber's premises for the purpose of establishing connections between any two of the subscriber's telephones and between the telephones and the central office. Such switching equipment is furnished and maintained by the telephone company at rates which are based upon the amount of such equipment.

Private branch exchange telephone stations usually require little wiring and no protectors and are furnished at rates which are based upon the investment charges. The trunk lines to the central office are furnished at rates which may include the whole or part of the local central-office charges. In general, all completed outgoing messages are metered and paid for according to a sliding scale as described under message rates.

In most states new rate schedules must be submitted for approval by the commission and do not go into effect until after approval has been given. In a few states the utility companies may at any time establish new rates which are binding upon the subscribers or customers of the utility unless set aside by commission order after public hearings.

A change of rates applying to one class of subscribers may affect not only the number of subscribers as a whole but also their distribution among classes. The rate policy of the company under which its business was developed must, therefore, be given full consideration whenever rate schedules are revised.

Subscribers are generally required to enter into contractual relations with the telephone company in order that the obligations of each may be clearly defined. While a contract is executed with respect to a particular subscriber, who may be an individual or a legal association of individuals, the use of the telephone is not restricted to the subscriber. It may be used also by the subscriber's employes, agents, family, or guests, but the subscriber is responsible for the charges for all service rendered.

Contracts may be on either the flat or message rate basis, but in either case they specify the local-service area, cover local service in that area for one month, and usually call for monthly payments in advance. Contracts also cover the subscriber's liability for the charges for all toll calls which may originate at his telephone or telephones.

Contracts also cover the facilities for rendering service which the telephone company is under obligation to furnish, though only that portion of these facilities which is required for use on the subscriber's premises is actually specified. These include main-station telephones, extension-station telephones, extension bells, all switching apparatus, and the connecting telephone lines.

Monthly bills are usually rendered to subscribers giving the amount due in advance for local service as per the terms of the contract and the amount due for toll service during the preceding month, which may or may not be a calendar month. An itemized list of the toll calls, giving the number of calls to each toll point usually is furnished also. Connection details for toll calls billed are furnished on request but are not included on the toll-call statement.

It is also usual to include in the telephone-service bill the charges for telegraph service handled by telephone in those localities where arrangements have been made between the interested companies.

Bills are payable within a certain number of days after date. Discounts may or may not be given for prompt payment and penalties for delay in payment are not generally exacted. Delinquents usually have the matter called to their attention by telephone within a fixed period of delinquency. At the expiration of a second delinquent period notice is given that the service will be discontinued at a specified time unless the obligation is met before that time.

At the expiration of the time limit, the subscriber's line connection is either opened altogether, in which case service is reported as temporarily discontinued, or the line terminal is so designated that operators will switch all originating calls to that department which is in charge of collections until the amount is paid.

The denial of service routine is, however, subject to liberal interpretation by authorized representatives in case of need. At times it is impossible to reach the subscriber and in spite of the notification, subscribers occasionally overlook the matter without intent. In such cases service is restored on the receipt of reasonable assurance regarding payment. Furthermore, in these cases where originating calls from delinquent subscribers are routed to the collection department, real emergency calls are permitted.

Discrimination.

Nearly all public utility laws forbid discrimination.

In principle, all subscribers are entitled to an equal standing in their relations with the utility, and hence the interested public is entitled to equally favorable consideration relative to applications for service, service contracts requirements, the quality of service rendered subscribers of the same class, the rates for the same class of service, the proper adjustment of rates for different classes of service, terms of payment, discounts and deposits when required, and the imposition of penalties for nonpayment of charges.

6. Standards of Telephone Service.

As previously indicated, only two states, Wisconsin and Illinois, have thus far undertaken to establish even tentative standards for telephone service, though most of the state laws, either directly or by implication, provide for the setting of such standards.

Telephone service involves a considerable number of factors, the more important of which have been discussed in the preceding section. The grade of any given service may be determined by the values of the separate factors, each measured by actual accomplishment, expressed in terms of specified requirements with respect to all factors would constitute a set of telephone service standards.

The fixation of suitable service standards involves a comprehensive study of individual community needs. These vary widely with the size of the community and with the nature of its business and social interests. Moreover, service standards can not be considered independently of the costs because the cost, which largely determines the charge, increases with the grade of the service and because a different estimate of value is placed on grade in different communities.

Many commission cases involve directly or indirectly both grade of service and rates. All parties interested are at a disadvantage on account of the absence of service standards by means of which the grade can be measured. Decisions must, therefore, be based on judgment instead of established fact. It is therefore in the interest of both the public and of the telephone utility that standards for telephone service be determined. The Bureau of Standards confidently hopes to enlist the co-operation of regulatory commissions and of the telephone interests in this work.

The Telephone in The Netherlands

Mixed Situation as to Telephone Concessions and Operating Conditions in Holland—Different Classes of Concessions—Equipment Includes Magneto, Common Battery, Semi-Automatic and Full Automatic—Service Fairly Good

By George E. Anderson
U. S. Consul General, Rotterdam, The Netherlands

The telephonic situation in The Netherlands is in a very mixed state both as regards the concessions or legal organizations under which the various systems are operated and as regards telephone plants. There are three, or perhaps more properly, four systems of operation to be reckoned with.

In some of the principal cities, such as Utrecht, Leiden, Delft—in fact, in all cities where other arrangements have not been made—the national government operates telephone systems as adjuncts to the postal and telegraph services of the country and the interurban services between such cities is a part of the government's normal system of communications. There also is one private concern operating a local service, namely, that of the Alkmaar Telephone & Express Co. (N. V. Alkmaarsche Telephoon en Goederenbesteldienst), of Alkmaar, a former private company at Amsterdam having given up the only other private concession granted.

The third class consists of the concessions granted by the national government to various municipalities which either operate the systems themselves or—which forms a possible fourth class—leases the concession to a private or semi-private concern for exploitation and operation.

The systems owned and operated by or in behalf of the municipalities and the single private concession with the date of the expiration of the concessions are as follows:

Municipality.	Termination of concessions.	System exploited by:
Amsterdam	Concession granted until further notice	Municipality
Rotterdam	Concession granted until further notice	Municipality
The Hague	July 6, 1927	Municipality
Arnhem	June 4, 1921	Municipality
Appeldorn	February 3, 1923	Municipality
Maastricht	May 14, 1926	Municipality
Enschede	February 15, 1926	Municipality
Eindhoven	March 25, 1927	Eindhoven Telephone Co.
Meppel	July 17, 1926	Municipality
Assen	March 5, 1927	Municipality
Purmerend	May 2, 1926	Municipality
Winschoten	March 15, 1926	Winschoten Telephone Co.
Doesburg	March 4, 1925	Doesburg Telephone Co.
Woerden	February 1, 1928	Woerden Telephone Co.
Wijk, by Duurstede	July 14, 1926	Wijk Telephone Co.
Rhenen	August 12, 1926	Rhene-Veenedaal Telephone Co.
Helmond		Municipality
Alkmaar	Concession granted until further notice	Alkmaar Tel. & Express Co.

Where these municipal concessions exist, the services within the municipal systems are operated by the municipalities or their concessionaires, but the interurban service connecting the municipalities is operated solely by the central government. The telephone systems in all other cities of the country are owned and operated by the central government. It is understood that the policy of the government is to take over all these systems and their respective plants as the concessions under which they are operated expire.

In the cases of systems owned and operated by the municipalities, this becomes more a question of expediency than of the actual expiration of a governmental concession in most cases, and the matter of expediency depends largely upon the adaptability of present plants to a national merger and upon the question of economical arrangements.

This proposal of taking over the municipal lines, which would be done as against current valuation, has been under discussion for some time and a commission appointed by the government has been considering the question but so far no action has been taken.

The great increase in the cost of materials and operation has been the chief deterrent to the government's taking such action since under present conditions the transfer of the municipal systems to the national government would be an added burden to the government. Under the terms of its charter, the sole remaining private concession can be taken over by the government whenever it so desires.

The plants in use vary almost as greatly as the number of various telephone systems existing the world over. The central stations in Amsterdam, for example, are Siemens Halske; those in The Hague are Ericsson and the Rotterdam system is Ericsson. There are also some American systems and a considerable number of Berliner and Protas instruments are in use—in short almost any variety of make of switchboards and instruments can be found. The only national requirement seems to be that the service be by double line systems.

The smaller cities in general use the so-called "hand" systems—i. e., inductor or magneto systems. In the larger cities the central battery systems are in use while in Amsterdam, Rotterdam, The Hague, and Nijmegen semi-automatic systems have been or are now being introduced.

The question of the adaptability of the full automatic and semi-automatic systems in Holland is being tried out at the present time to a certain extent. In Amsterdam, for example, sections of the general system involving from 2,000 to 4,000 subscribers have been fitted unofficially with full automatic service, and the municipality has been experimenting for something like 15 years with the full automatic system. In other sections in Amsterdam and in most of the larger cities, semi-automatic systems are used.

The general state of the services may be realized from the fact that in Amsterdam, for example, the "north" central circuit is fitted with an ordinary central battery system; the "south" central is a semi-automatic system; while, as above indicated, other centrals are fitted, temporarily at least, with full automatic service. All are united in a general "central" and all connect with the interurban systems.

At present German interests seem to be controlling the business both in the matter of central station equipment and in the sale of instruments. German costs, by reason of the low value of the mark, are below competitive prices from the United States, Sweden or other countries with high exchange values. In lots of 2,000 or more, wall instruments can be had here now for 45 guilders or the equivalent of about $15 American currency. Desk instruments are priced at 50 guilders or about $16.66 American currency.

All things considered the services are fairly good though connections by long distance systems are slow and it is sometimes necessary to wait hours for a con-

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nection between cities like Rotterdam and The Hague (about 16 miles) and Rotterdam-Amsterdam (about 44 miles). This is due partly to congestion, partly to the difficulty of adapting the various systems to each other, and partly to a shortage of cables, especially for lines between interurban offices and the centrals in the larger cities. The government is arranging for an underground cable connection between Rotterdam, The Hague, and Amsterdam to overcome disturbances from natural causes, especially storms in winter.

At the present time, subject to the delays and troubles noted, fair service can be had not only between the cities of The Netherlands but also with practically all telephone centers in Germany, Belgium, and with those cities in France which can be reached through Paris.

There has been considerable agitation on the part of the commercial interests of the country for under sea cable connections with Great Britain, and this has been the subject of repeated representations from the Rotterdam and Amsterdam chambers of commerce and a thorough investigation on the part of the government. The matter is in hand and it is understood that the project will be undertaken as soon as the finances of the country and business conditions generally will justify the step.

November Summary of Reports of Class A Telephone Companies.

The November, 1921, summary of the reports of revenues and expenses of 67 Class A telephone companies, as compiled by the Bureau of Statistics of the Interstate Commerce Commission is shown on this page.

A decrease in traffic expenses of 6.4 per cent compared with those for the same month of 1920 is shown in this report. During November, 1921, the ratio of expenses to revenues was 71.9 per cent as compared with 77.73 in November, 1920. The ratio for the 11 months ending with November was 72.6 per cent in 1921 and 76.79 per cent in 1920.

Company stations increased 5.4 per cent during November, making a total number in service on November 31, 1921, of 9,727,895.

Program of Florida Convention at Tampa, March 2-3.

Word has been received that arrangements have been completed for holding the next annual convention of the Florida Telephone Association at Tampa, March 2 and 3. Officers of the association have prepared an interesting program and a good attendance is expected. The complete program follows:

THURSDAY, MARCH 2, 10 A. M.

Address of welcome on behalf of the city of Tampa, Chas. H. Brown, mayor.

Address of welcome on behalf of the association, President W. G. Borein.

Response, Dr. W. L. Moor, Tailahassee, vice-president Florida Telephone Association.

Address, R. H. Burr, chairman, Florida Railroad Commission.

THURSDAY AFTERNOON, 1:30 P. M.

"Telephone Problems," F. B. MacKinnon, Washington, D. C., president, United States Independent Telephone Association.

"Intercompany Relations," A. B. Greene, telephone engineer, Florida Railroad Commission.

"Say It With Service," E. C. Blomeyer, Chicago, sales manager, Automatic Electric Co.

"Pay Station Development," R. L. Boyd, Jacksonville, district manager, Southern Bell Telephone & Telegraph Co.

THURSDAY EVENING, 8 P. M.

Special musical entertainment.

FRIDAY, MARCH 3, 9:30 A. M.

"National Difficulties and Encountered Obstacles," J. L. W. Zietlow, Aberdeen, S. Dak., president Dakota Central Telephone Co.

"Seasonal Rates," W. H. Adkins, Atlanta, general contract agent, Southern Bell Telephone & Telegraph Co.

"Keeping the Public Informed," F. W. Webster, South Atlantic Telephone & Telegraph Co.

FRIDAY AFTERNOON, 1:30 P. M.

Open forum.

Election of officers.

New Underground Cable Between Liverpool and Manchester, Eng.

A new underground telephone cable has been laid between Liverpool and Manchester, England, which has greatly improved communications between these cities and North Wales, as well as a number of other Lancashire towns, of which Manchester is the principal switching center, according to a recent issue of The Electrical Review.

This cable is loaded at intervals of about 1¾ miles, and consists of 160 pairs of copper wires, each weighing 40 pounds to the mile.

It is 36½ miles long, and the connecting up of the comparatively short lengths in which it had to be drawn into the ducts required 160,000 soldered joints, each electrically tested.

Its speaking efficiency is equivalent to that of a standard telephone cable nine miles in length. The total number of trunk circuits between Manchester and Liverpool is now 333. A cable is also being laid between Manchester and London, and work has been begun on another connecting Birmingham and Manchester.

Item.	For the month of November— 1921.	1920.	Increase or decrease (*). Amount.	Ratio, Pct.	For the eleven months ending with November 1921.	1920.	Increase or decrease (*). Amount.	Ratio, Pct.
Number of company stations in service at end of month	9,727,895	9,230,877	497,018	5.4	.....	.....	.....	....
Revenues:								
Subscribers' station revenues	$29,914,691	$26,888,096	$3,026,595	11.3	$317,983,245	$277,195,478	$40,787,767	14.7
Public pay station revenues	2,071,050	1,962,236	108,814	5.5	22,156,804	21,129,223	1,027,581	4.9
Miscellaneous exchange service revenues	414,228	397,716	16,512	4.2	4,573,291	4,165,146	408,145	9.8
Message tolls	11,604,058	11,199,430	404,628	3.6	126,654,814	123,874,273	2,780,541	2.2
Miscellaneous toll line revenues	1,309,488	1,242,906	66,582	5.4	14,232,187	13,175,798	1,056,389	8.0
Sundry miscellaneous revenues	735,369	592,169	143,200	24.2	7,606,592	6,233,181	1,373,411	22.0
Licensee revenue—Cr.	1,717,820	1,569,932	147,888	9.4	18,358,113	16,184,502	2,173,611	13.4
Licensee revenue—Dr.	1,716,965	1,568,742	148,223	9.4	18,345,856	16,179,014	2,166,842	13.4
Telephone operating revenues	$46,049,739	$42,283,743	$3,765,996	8.9	$493,219,190	$445,778,587	$47,440,603	10.6
Expenses:								
Depreciation of plant and equipment	$ 6,641,985	$ 6,030,779	$ 611,206	10.1	$ 69,992,206	$ 65,991,063	$ 4,001,143	6.1
All other maintenance	6,885,553	6,580,646	304,907	4.6	74,005,481	70,259,029	3,746,452	5.3
Traffic expenses	13,171,498	14,078,761	*907,263	*6.4	144,977,509	141,476,033	3,501,476	2.5
Commercial expenses	4,397,923	4,263,831	134,092	3.1	47,093,464	44,156,463	2,937,001	6.7
General and miscellaneous expenses	2,012,902	1,911,714	101,188	5.3	22,052,479	20,429,220	1,623,259	7.9
Telephone operating expenses	$33,109,861	$32,865,731	$ 244,130	.7	$358,121,139	$342,311,808	$15,809,331	4.6
Net telephone operating revenues	$12,939,878	$ 9,418,012	$3,521,866	37.4	$135,098,051	$103,466,779	$31,631,272	30.6
Other operating revenues	$ 3,722	$ 4,868	*$ 1,146	*23.5	$ 43,072	$ 56,350	*$ 13,278	*23.6
Other operating expenses	2,473	2,180	293	13.4	28,865	39,931	*11,066	*27.7
Uncollectible operating revenues	223,238	151,062	72,176	47.8	1,867,335	1,443,298	424,037	29.4
Operating income before deducting taxes	12,717,889	9,269,638	3,448,251	37.2	133,244,923	102,039,900	31,205,023	30.6
Taxes assignable to operations	3,291,189	2,410,206	880,983	36.6	34,379,271	27,713,493	6,665,778	24.1
Operating income	$ 9,426,700	$ 6,859,432	$2,567,268	37.4	$ 98,865,652	$ 74,326,407	$24,539,245	33.0
Ratio of expenses to revenues, per cent	71.90	77.73	*5.83	*7.5	72.60	76.79	*4.19	*5.5

Statistics of Operations for November, 1921, of Telephone Companies Reported to the Interstate Commerce Commission.

Sundry Snapshots Along the Trail

Observations and Comments, Pertinent and Otherwise On the Sunshine and Shadows of Telephone Work

By Well Clay

Did you ever watch a weaver
  Clacking shuttles left and right
Through the warp while weaving patterns
  With his threads of color bright?

Forth and back he throws the levers,
  Every movement makes a line;
Unrelated threads are added,
  Forming one complete design.

See the "Central" at her labors
  Answering calls both left and right.
Does she, too, help weave a pattern
  As she deftly "kills" each light?

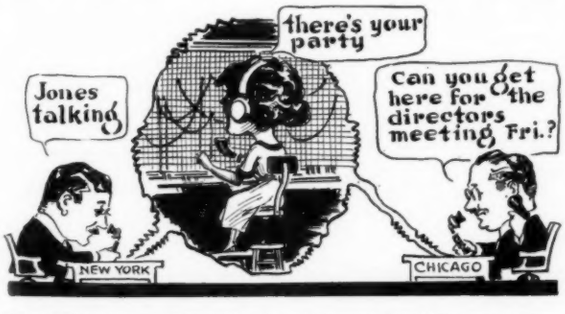
Does each message that she handles
  On her loom of wires bright
Form a thread of some strange pattern,
  Sometimes sombre, sometimes bright?

Does the woof she weaves so quickly,
  Connecting people far and near,
Tie them closer in relations
  Day by day throughout the year?

Is that pattern, ne'er completed,
  Useful in the life of man;
Does the weaver sense the glory
  Of her work upon the plan?

While not presuming to infringe upon the prerogative of Sister Anne Barnes, of Des Moines, Iowa, in commenting upon the activities of operators, yet I am going to say a few words about these bright weavers of wires and words; to use a poetic description. Not so much about them in a sense, either, but about their work.

Their hours of labor, their pay, and their responsibilities have all been changed wonderfully during the past few years. Their pay and their responsibilities have both been on an upward trend and their hours of labor downward, as is fitting they should be to a reasonable degree. Of course, in speaking of these matters I am to be understood as referring more particularly to conditions that apply in the plant, on the working force of which I have been engaged for a period of years.



The Operator of Today is in a Unique Position and One Favorable for Doing Real Service.

In the earlier days of operating in the Independent field, say 20 to 25 years ago, the operating force in small-town systems generally consisted of two shifts with one girl in each shift. The day girl went on at 7 o'clock a. m. and stayed on till 6 o'clock p. m., except for the time she stopped to eat her lunch or to go home for dinner.

In the latter event, she simply locked up the office and took an hour off. Sometimes, when she did this she would leave the doctor's office connected with the residence of a sick patient so in the case the doctor was wanted the connection was already made and any ring to central would ring the doctor's telephone.

Sometimes she would leave certain other patrons connected, as for instance a business place with the proprietor's residence, or any two connections which were liable to be wanted during that hour. In this she was living up to the expectations of her patrons for service; for at that time the telephone was not such an indispensable and first-to-be-thought-of adjunct to daily activities as is now the case. She had ample time then to keep the run of all the news which went over the wires and to sweep out the office, take care of the books and collections in many cases.

It would seem queer now to see an operator lock up and desert her office in the slack periods of an afternoon and go out along the street collecting the monthly bills. Then it was thought to be all right. She usually received for her six days' work (there was no Sunday service then) the princely sum of four or five dollars a week, and from this lofty plane looked down on the poor "hired girl" who was working close to seven days a week for a dollar and a half to two dollars a week and her board, room and washing.

The operator then did not have many rural lines; sometimes none at all; and there were no weather or market reports to bother with, to say nothing of giving out time and railroad schedules. That all came later as the public began more and more to use their telephones instead of trying to carry a cargo of miscellaneous information about in their own minds. The first recognized use was to call a doctor in case of sickness or accident. The multitude of uses to which the service is put today were gradually recognized and made use of as time passed.

It has been an age of discovery and utilization, and who can say the full measure of possible uses has yet been found. The old time girls could and did receive callers while on duty and were expected to entertain them with explanations of how the service was given, even to letting some cherished friend put on the head-receiver at times and "listen in" while some local swain was conversing with his lady love in blissful innocence that other ears were open. Of course, all this was done under pledges of secrecy but it was done, and resulted in trouble too, no doubt.

The Old-time Girls Even Let a Cherished Friend Put the Head Receiver on and "Listen In."

There was very little provided for in the way of "information" as it is now handled. People then wound their clocks and made their own observations about the weather or took it as it came without comment. When they took a train they were on hand about an hour before the train left so as not to miss it. When a fire broke out the nearest observer started on a run for the fire house yelling at the top of his voice. He did not think about a telephone and if he did it wouldn't have helped matters any, for there was seldom a telephone at the fire hall and never anyone to answer it if he had asked for that number. Arriving at the fire hall out of breath and unable to give the rope more than a pull or so he was "all in" and sometimes unable to give the location of the fire.

The housewife did not have the amount of telephoning to do she now has, and used to have yearly or monthly supplies ahead instead of calling the various shops along about 11:30 to rush over some bread or meat or other supplies in a hurry.

The central girls had to have more time to handle traffic then as they had to ring

each call by hand and two or three calls at once was a peak load. With the gradual increasing use of the telephone as a service instead of a novelty, all these things began to change and the operator was soon unable to stand the strain of such long hours and was awarded shorter ones with an increase in pay. The increase in pay was usually the result of the fear that she would quit unless she got a raise, there being no substitutes to take her place.

If she was sick or had to absent herself for other reasons for a day or so, the lineman or the manager would take her place and get along as best he could. With the increasing use of the service, however, this got to be impractical and unsatisfactory to the patrons, and extra girls were taught how to run the board in cases of emergency or the unavoidable absence of the regular operator. Soon there were two girls on the day shift and the night girl did not have to report until 9 o'clock or later.

Wages gradually came up and the number of hours of work were reduced as added burdens were laid upon the shoulders of the operators. New rules had to be devised and enforced to enable them to meet the needs of the increase of traffic. Their personal liberties while on duty were more and more circumscribed and reduced as their job grew to demand the ultimate in the way of service. Their employment began to be recognized as a profession and was accordingly exacting

As business grew and rural lines began to spread their network of wires into every corner of the land, more operators were added and the style of switchboard was changed—usually from the old drop type to the faster and more flexible common battery or flashlight system.

Then operators began to be operators and were getting double or more what they did in the beginning. Shifts were arranged so as to bring the most girls on at the hours when traffic was the heaviest and reduce their number to the minimum necessary when there were few calls.

State laws were enacted to help protect the operators' interests by defining the number of hours they might be made to work and set the minimum wages which they might receive. This had an effect of keeping a good many girls off the payroll who were not real experts and to keep the pay of the better grade of operators at the same figures which the ones were being paid who were not their equals. In other words, it placed them all in the same class and probably killed much ambition on the part of those who could rank A No. 1, if their merits could have been recognized in the pay envelope.

Nowadays, there is seldom a board in any small town but what three shifts a day are made and girls usually get from $40 to $60 per month for their services. Their hours of labor are in many cases averaging around 44 to 48 hours a week including Sundays, on which day they work short shifts, say three Sundays out of five.

In these days of retrenchment and cutting down of costs one hears a great many requests to cut expenses, but I have yet to hear of anyone, patron or stockholder, who has suggested the reducing of salaries of operators. Some have suggested that they work longer hours or that their number be reduced, but never that their pay be reduced. The operator of today is in a unique position and one favorable for doing a real service for the world, if she grasps the great idea.

APHORISM: Artificial flowers excite only a passing interest.

DAILY REMINDERS

By Miss Anne Barnes

Traveling Chief Operator, Iowa Independent Telephone Association, Des Moines, Iowa

Report for duty at least five minutes before time to go to the switchboard.

Put on telephone set complete and, with receiver plug in hand, secure your assignment of position. Step to the left side of the chair of the orator you are to relieve and insert your receiver plug in the left-hand jack.

The operator you are relieving will remove her receiver plug from the right-hand jack and leave her chair at the right side. She will leave the board at once.

Be sure that your transmitter is in such a position that your upper lip just escapes the top of the mouthpiece before you answer the first signal.

Take a plug in each hand, drawing hands to the ends of the keyshelf.

When a signal appears, insert the answering plug quickly and immediately pick up the calling plug. At the same time say: "Number, please?" directly into the transmitter; speak in clear and quiet tones, and with the rising inflection.

The subscriber asks for a number.

Repeat the number by separating each digit, and pausing slightly after the style-strip number. Repeat the number in a distinctly questioning tone.

If the subscriber does not acknowledge the repetition, you may not have spoken distinctly enough, or he may not have heard you; therefore, repeat the number again. When the subscriber learns that you wish his acknowledgment, he is usually glad to give it.

The purpose of careful repetition is to claim the subscriber's attention through the repetition of the number.

Handle all connections in putting up and taking down connections by grasping the fibre part of the plug firmly.

Dispose of each call before taking up another.

Do not communicate with other operators.

Refer calls for operators to the chief operator's desk.

Do not listen in on connections.

Never laugh or talk loudly in any part of the telephone building.

Put your personality into your work.

Use the voice with the smile—*it wins.*

Possibilities of Future in Communication Shown to Engineers.

Plans of world-wide communication, networked for the next generation, in which combinations of radiotelephony, carrier current, long distance wire lines and submarine cables will be utilized, were outlined February 17 and 18 to members of the American Institute of Electrical Engineers, who were the guests of the Bell system at its laboratories in the Western Electric Co. building, 463 West street, New York City.

Demonstrations of new devices, many shown publicly for the first time, were included in the program. An instrument termed a stereopticon-oscilliograph enabled the visitors to "see themselves talk."

Speaking into an ordinary telephone transmitter, the experimenter saw the effects of his voice projected on a screen in electric waves, which took on various forms according to the words spoken. Vacuum tubes, with an output of 10,000 watts, which, it was said, ultimately would displace heavy machinery in transportation, were shown. The possibilities of using these vacuum tubes in wireless and power fields were unlimited, it was said.

The engineers were interested especially in weird demonstrations of singing, talking and "shimmying" crystals of Rochelle salts, which were produced during the war for submarine detection work. Connected with wire to a talking machine, the salt crystals seemed to speak in a tone much louder than that ordinarily heard from a phonograph horn.

Another novelty was a device whereby one could hear molecules turn over when polarization was changed.

Commissions, Courts and Councils

Discussion and Rulings of State Bodies Having Supervision Over Telephone Companies—Decisions of Courts in Matters of Interest to Public Utilities and Actions of City Councils Relative to Franchise, Rates and Service

Nebraska Commission Asks Bell Company for Much Data.

The inquiry now in progress by the Nebraska State Railway Commission into the affairs of the Northwestern Bell Telephone Company, undertaken on the demand of ten cities and towns that not only do not want the Bell to have the increases here and there that it asks for, but want the present 10 per cent surcharge removed, promises to be most rigorous.

The commission has submitted to the company officials a long questionnaire, which calls for the submission of a large number of compilations. It also insists upon a copy of the contract by which the company pays 4½ per cent of its revenues to the parent Bell, the American Telephone & Telegraph Co., and a statement of what the company gets for this large sum, nearly $18,000 a month.

The questions are also intended to bring out the company's relations with the Western Electric, owned by the A. T. & T., and on what basis it buys materials and supplies. The fact that the Northwestern Bell company is also owned almost entirely by the A. T. & T. makes a problem that the objecting subscribers insist on having more light upon.

The commission is also asking for much data about wages and wage scales. It wants to know the number of employes by departments for 1,000 stations in 1912, 1917 and 1920, and wants to know what their wages were in 1915, 1919 and 1921. It also desires wage scales for certain periods, and copies of working agreements with employes.

The commission is going deeply into the question of maintenance and depreciation, asking for various percentages with relation to operating expenses. It also wants to know the cost of all buildings, the floor space devoted to departments and the rentals, if leased in part to others. It wants to know how the license revenues are divided as between toll and exchange and the number of instances affected.

The commission also calls for the book cost of the average plant in service, divided as between toll and exchange. It wants to know generally how the revenues and expenses are divided as between exchanges and between the large exchange at Omaha and those outside. Figures of the year and the last three months on these items are desired. The commission is also pressing for a classification of the property as of November 30, 1921, by exchanges, subdivided into exchange and toll property and separated as between charges to property directly allocated and charges pro rated as between the different classes of property and exchanges.

Many of the computations were prepared by the Bell for the rate case, but it is expected that it will take a number of weeks to get all the data desired, which includes some information as to the bases for separation of the property owned by the company's predecessor, the Nebraska, and located in South Dakota, by standard classification of property accounts.

Telephone Rates in District of Columbia Remain Unchanged.

Telephone rates charged by the Chesapeake & Potomac Telephone Co. in the District of Columbia, which were to expire by limitation on February 28, will be continued in effect indefinitely, under an order handed down February 15 by the Public Utilities Commission of the District of Columbia.

The company's 4½ per cent agreement with the American Telephone & Telegraph Co. and its relations with the Western Electric Co. were upheld by the commission as resulting in substantial savings.

One of the features of the order is the commission's contention that income tax is not an expense deductable from a utility's net earnings in fixing the net return. Included in the company's statement of operations was an amount of $284,536.63 for operating taxes, of which approximately $80,000 was for income tax. The commission held that this amount should be paid from the net income.

The value of the used and useful property as of December 31, 1921, was estimated as $15,217,000 and this figure was used by the commission in deciding the case. Exhibits presented showed a net operating revenue for 1921 of $822,614.88, equivalent to a return of 5.52 per cent on an average fair value for the year of $14,907,000.

This exhibit also included an item of $216,481.93, representing the amount paid during the year to the American Telephone & Telegraph Co., under the Chesapeake company's 4½ per cent agreement with that company. Taking up the reasonableness of this payment, the commission estimated a saving on the part of the local company of approximately $1 per annum per station by the rental of these instruments from the parent company, instead of their being purchased outright. Applying this saving to the 94,373 subscribers' stations in service during 1921 would account for $94,373 of the amount paid.

To this figure the commission added the saving through the rental of instruments used by operators and linemen, bringing the amount of the payment to approximately $100,000 annually. The balance of $116,000 represents payment for special services and privileges performed by the parent company and the commission believes this amount to be entirely reasonable.

A review of the company's contract with the Western Electric Co. showed a saving for the year 1920 of $82,860 or 16.59 per cent in the amount paid for telephone apparatus and supplies purchased from the Western Electric Co. over the amount that would have been paid had these purchases been made from other manufacturers.

In view of numerous complaints made to the commission during the past year of the company's failure to install service for prospective subscribers, inquiry was made at the hearing of the company's plans for extending its facilities. Witnesses for the company said there were approximately 391 unfilled contracts at the close of 1921, but stated that 120 of this number would be given relief by September of this year. Forty-two of the applications, according to the witnesses, are included in a suburban section where the development is scattered.

The remaining applications, they stated, with the exception of 19 grouped in a section of the city where there is a constant changing population, are in isolated and scattered locations that could not be grouped and where the prospect for immediate relief would depend upon the discontinuance of individual lines in the neighborhood of the applicants.

The commission says it believes the company is making every reasonable effort to furnish service to the applicants and that it would be inadvisable to require it to extend its lines to those sections where the prospect of future business would be uncertain.

During the war the company was put to considerable expense by the necessity of paying for the housing and caring for out-of-town operators, but testimony presented at this hearing showed that their places had been filled by native operators and the building in which they had been accommodated closed on December 1, 1921.

Charges for installing, removing, and changing telephones, including the so-called "directory charges," were upheld by the commission as fair and reasonable and they will therefore be continued in effect.

The commission refused to require the company to replace its manually-operated switchboards with automatically operated boards, in view of the satisfactory service

being given with its present equipment. The company said it does not contemplate replacing its present boards until they have "lived their useful lives."

Scott County (Ill.) Company Allowed Higher Rates.

A modified temporary schedule of rates was approved by the Illinois Commerce Commission in an order handed down January 12 for the Scott County Telephone Co. for its Winchester exchange, effective February 1. The old and new net annual rates compare as follows:

	Old	New
Individual line business	$18	$30
Two-party line residence	..	24
Individual line residence	12	21
Two-party line residence	12	18
Two-party line residence outside city limits	15	18
Extension stations (city and rural)	6	6
Rural business, metallic circuit.	18	24
Rural residence, metallic circuit.	18	21
Rural residence, grounded circuit	12	15

It is estimated that the new rates will yield $4,000 per annum for depreciation and return on the company's investment. A fair value of its property of $46,000 was used by the commission for rate-making purposes.

The Scott County company furnishes service to about 792 subscribers' stations. Its plant is of the combination common battery and magneto type with metallic circuits within the city limits and both metallic and grounded circuits in the rural communities.

The new rates are only temporary, jurisdiction being retained by the commission for the purpose of issuing further order.

Hear Bell Company's Request for Higher Rates at Muncie, Ind.

On a motion filed by F. B. Johnson, of Indianapolis, representing the city of Muncie, Ind., in the hearing of the Indiana Bell Telephone Co.'s petition for increased rates at Muncie, the hearing which began in Muncie was resumed in Indianapolis last week under an order issued by the state public service commission, E. E. Blessing, C. E. Van Auken, and L. S. Douglas are the members of the commission hearing the petition.

The purpose of holding the hearing in Indianapolis, it is understood, is to allow the attorney representing Muncie to examine the exhibits introduced by the telephone company, including all answers to the interrogatories propounded some time ago by the public service commission to the company relative to the Bell company's relations with the American Telephone & Telegraph Co.; to look over the appraisal made by engineers employed by the telephone company; and to examine the reports of auditors employed by both the telephone company and the public service commission to examine the books of the petitioner.

At the hearing in Muncie, counsel for the petitioner declared that the company in Muncie has been able to operate only through assistance given by the American Telephone & Telegraph Co. and that an actual loss of $15,000 was suffered last year.

Hear Complaint of New York City Against Telephone Rates.

Hearings on the complaint of the city of New York against existing rates of the New York Telephone Co. in that city were resumed Wednesday, February 15, before the state public service commission, with Assistant Corporation Counsel M. M. Fertig representing the city. This case was begun in October, 1920. The telephone company's side of the case was presented at hearings which continued until May, 1921, when an indefinite recess was taken at the city's request to give it time to prepare its case with the aid of experts.

When the February 15 session opened, J. G. Wray, an expert retained by the city, submitted evidence in detail showing the cost of the telephone company's plant and property in Greater New York, as of December 31, 1920, which was declared by the witness to be $121,066,554. The entire afternoon session was spent in analyzing the inventory secured by the witness from the company's books and records.

The next hearing in the New York City rate case will be held Wednesday, March 8.

Sleet Storm "Way Down South."

P. H. Petersen, of the Dixie Telephone Co., Pineora, Ga., under date of February 14, writes TELEPHONY:

"I bought this exchange in November, 1921, and had just got nicely started when, January 26, we had one of the severest sleet storms ever known here. Am just getting my lines working satisfactorily again.

"Here's hoping that we will have no more sleet this winter and that TELEPHONY will come regularly, for I sure do enjoy reading your journal."

Farmers' Company Pays 8 Per Cent—No Protests Against Rates.

The Farmers' Home Telephone Co., of Gibbon and Shelton, has been given authority by the Nebraska State Railway Commission to continue in effect for an indefinite period the schedule of rates that has been in force for several years. Although the company serves a very large proportion of farmers from its two exchanges, not one of them entered a protest against the continuance of the rates, which, according to the figures submitted to the commission, yield much more than a reasonable dividend return. As most of the larger companies and some of the smaller ones have felt the opposition of farmers in their applications continuing the present rates, an explanation is necessary.

Here is the explanation: The farmers own the company. Several years ago, rather than stage a battle with the farmers, who declared they would never pay the increased rates the commission said should go into effect, the then owners sold to the farmers. Immediately thereafter the new owners accepted the schedule they had previously protested against, and it has been in effect since.

The commission found that the company earned the past year $2,300, in excess of an 8 per cent dividend, and while it apparently justified a reduction in rates, the commission said it would not make such an order. It appears that after the farmers bought the company, they put a farmer in to manage it. The result was disastrous. He ran up a debt of $9,000 in five months. He was let out and Manager Piper induced to return.

Since then he has cut the indebtedness in two, wages have been reduced and rigid economy pursued. The stockholders have been without dividends for two years and as they face a substantial rebuilding and reconstruction program, the commission figures it will not pay any for another pair of years. The damage to the physical plant by the amateur management has been fully repaired, and lines have been put back into service condition.

Transfer Controlling Interest in Central Indiana Company.

Max F. Hosea, of Indianapolis, manager and principal owner of the Home Telephone Co. at Noblesville, Ind., has purchased the controlling interest in the Central Indiana Telephone Co., which owns the plant at Sheridan and several lines in the northwestern part of Hamilton county. By the transfer of this property Mr. Hosea becomes the owner of 55 per cent of the stock.

Report of Cuming County Company to Nebraska Commission.

The Cuming County Independent Telephone Co., of Wisner, has filed with the Nebraska State Railway Commission its annual report for 1921, showing a net operating income for the year of $4,689.46, allowing the company to pay a 7 per cent dividend of $3,727.09 on a capital stock of approximately $35,000, taxes of $655.99 and passing $306.38 to surplus. The company is managed by J. W. Richmond, one of the leaders in Independent telephony in the state. The following figures are from the annual report:

Assets—Intangibles, $8,412.86; land, $1,120; central station buildings, $6,433.16; exchange switchboards, $4,631.39; city subscriber station equipment, $4,303.51; farm subscriber's station equipment, $7,859.87; city pole lines, $2,540.45; city

Conventions: Florida, Tampa, March 2-3; Kansas, Wichita, March 8-10; Oklahoma, Oklahoma City, March 14-16; Texas, Fort Worth, March 22-24; Ohio, Columbus, March 29-30; Iowa, Des Moines, April 4-6

aerial wire, $1,464.91; aerial cable, $3,304.44; underground cable, $5,958.37; farm pole lines, $31,473.26; farm aerial wire, $15,850.37; motor vehicles, $2,663,80, making a total with miscellaneous items of $97,307.68 for fixed investment. In addition there are liquid assets of $3,313.62, and deducting $2,265.81 as cash in red, leaves total assets of $98,172.49.

Liabilities—Common Stock, $54,040.30; depreciation reserve, $32,156.06; advance payments, $1,747.55; profit and loss, $10,228.58, a total of $98,172.49.

Revenues—City, $8,834.40, and farm, $13,832.94, making a total of $22,667.34. Tolls are $1,116.36, making a grand total of $23,783.70.

Expenses—Current maintenance, $6,296.54; depreciation, $2,652.46; operators and other traffic expenses, $5,059.08; commercial expenses, $5,174.01, making a total of $19,182.09.

Principles of Fixing Rates Explained at State-Wide Hearing.

The fundamental principles of fixing telephone rates, as practiced by the New York Telephone Co. on a state-wide basis, were explained to the New York Public Service Commission on February 16 by A. D. Welch, general commercial superintendent of the company, in the commission's state-wide inquiry into telephone affairs.

"Telephone rates," Mr. Welch said, "should yield to the company an amount more than the cost of rendering service in the aggregate, including the securing of new capital, but these costs to the subscribers should be less than the value of the service." In this manner, he explained, the company was assured of a reasonable income while the consumer was given a service more valuable to him than what he pays for it.

A representative of New Rochelle inquired what would be the result if a blanket local telephone rate were applied to communities in the neighborhood of New Rochelle, which would permit telephoning to and from these communities without the payment of toll charges. It was developed that a procedure of this kind would impose such a high rate on the average local telephone user that the rate would be burdensome. The present system of providing a local rate to immediately neighboring communities, with a small toll charge to those sections not frequently called by the average telephone user, was declared the most equitable method.

"The value of telephone service to subscribers," Mr. Welch continued, "depends on the number of other subscribers and telephone terminals, while this value increases as the terminals increase. It is to the advantage of all, therefore, that these terminals be increased, and the only way this can be done is through local exchange development throughout the state."

The cost of service today, Mr. Welch declared, was such that lower rates were impossible. If service was given in any community at less than cost, he said, it would provide a burden which another community would have to bear.

Telephone development in New York state today was called adequate by the witness, who declared that outside of New York City 13.3 persons out of every 100 had a telephone, while in the city this figure was 16.7 telephones to every 100 population. This development would probably not be adequate for the future, he said.

Discussing the state-wide method of rate-making, by which the telephone company must secure an adequate revenue on the basis of the state as a whole and not from segregated communities, Mr. Welch declared that no other plan was feasible, as the state-wide method admits of adequate development and tends to prevent discrimination in rates between localities.

The hearing was then continued until February 20.

Rates Continued Although Net Income Is Small.

The Havana Telephone Co. has been given permission by the Nebraska State Railway Commission to continue indefinitely its present telephone rates of business, $2; residence and farm, $1.35; and switching, 45 cents. The company was given an 8 per cent increase in rates on March 1, 1921. Under these rates it has secured revenues of $7,136.48 and had expenses of $6,354.57. The net from operating, $781.91, will not pay a 5 per cent dividend on the stock.

The company has $3,000 of uncollected revenues on its books, and in order to help it out for the future, the commission allowed it to add 25 cents a month after the first of April, where prepayments are not made in accordance with the rules.

Bond Issue by Commonwealth of Madison, Wis., Approved.

In an order issued February 13 the Wisconsin Railroad Commission authorized the Commonwealth Telephone Co., of Madison, to issue $24,500 par value of its 6 per cent first mortgage bonds, and $23,000 par value of its 7 per cent collateral trust bonds dated May 1, 1921, and maturing May 1, 1930. The commission authorized the company to pledge as collateral security to the collateral trust bonds, the $24,500 of first mortgage bonds authorized.

The collateral trust bonds are to be issued for money only and at not less than 90 per cent of the par value thereof, and the funds derived therefrom are to be used to pay obligations incurred for extensions and additions to its property and plant, and all for purposes properly chargeable to capital account.

The commission also fixed 90 per cent of the par value of the first mortgage bonds as the lowest price at which such bonds may be sold under the terms of such pledge.

Physical Connection Between Allenton and Slinger, Wis.

The Wisconsin Railroad Commission handed down an order February 15 on complaint of A. G. Becker against the Allenton-Kohlsville Telephone Co. and the Washington County Telephone Co., directing the two companies to establish and maintain a direct physical connection between their exchanges at Allenton and Slinger by means of a clear metallic line to which no subscribers' instruments are connected. The two towns are about seven miles apart.

Each company is ordered to construct and maintain at its own expense that portion of the clear line within the limits of its existing system or to such point as may be mutually agreed between the two companies.

A toll rate of 5 cents per message between Allenton and Slinger is provided and each company is authorized to retain the toll collected at its exchange.

The order provides that upon placing in operation of the physical connection as ordered, the two companies may disconnect their respective party lines which are now receiving the service of both exchanges without additional charge. The physical connection is ordered to be in operation on or before June 1.

Legality of Telephone Rates Fixed by State Commission.

Telephone rates prescribed by the public service commission, which would allow a gross return on the value of the telephone company's property of 12.81 per cent and a net return of 6.81 per cent after allowing 6 per cent for depreciation are not confiscatory.

The reasonableness of an order of the public service commission fixing telephone rates, regular upon its face, may be questioned on the ground that the rates are so low as to be confiscatory, and hence to take property without due process of law; that they were fixed, arbitrarily and

unjustly, without regard to the preponderance of the competent evidence; or that they were fixed in such an unreasonable manner as to cause the shadow and not the substance to determine the validity of the exercise of the power.—State ex rel. Southwestern Bell Telephone Co.; Missouri Supreme Court; 233 Southwestern, 425.

Payment of Percentage of Revenues by Telephone Company.

A corporation, having acquired a telephone system constructed on county highways by a private individual, under a grant from the board of supervisors of a county under the Broughton Act, could thereafter, under Civ. Code, § 536, as amended by St. 1905, p. 492, construct its lines upon the county highways without the restrictions of the Broughton Act, or the grant by the board of supervisors to such individual.

A telephone corporation, having acquired telephone lines constructed by a private individual under a grant from the county board of supervisors under the Broughton Act, requiring such individual to pay the county 2 per cent of the gross annual receipts, is not required to pay the county such 2 per cent of the gross annual receipts. Under Civ. Code, § 536, as amended by St. 1905, p. 492, it had the right to "construct" telephone lines along and upon public highways, which right was not restricted to construction of new lines, but included the right to use the highways for lines constructed by such individual under such grant from the board of supervisors.—Inyo County vs. Hess; District Court of Appeal, California; 200 Pacific, 373.

Summary of Commission Rulings and Schedule of Hearings.

CALIFORNIA.

February 10: The California Telephone & Light Co., operating in Mendocino, Sonoma and Lake counties, authorized to issue and sell at not less than 91 per cent of their face value $50,000 of its first mortgage 6 per cent gold bonds.

February 14: Application filed by the Tulare Home Telephone & Telegraph Co. for authority to issue two promissory notes for $5,000 each payable to the First National Bank of Tulare and to the National Bank of Tulare to refund notes for like amount due to the same banks. The application sets forth that in April, 1920, the company was authorized to issue $10,000 worth of 6 per cent bonds to be sold for not less than 93, and being unable to place the bonds at that figure, issued notes instead.

February 16: Supplemental order issued authorizing the San Fernando Telephone & Telegraph Co. to use $1,855.61 of the proceeds of the sale of common stock to pay for additions and betterments and other capital expenditures.

February 17: Petition filed by the Home Telephone Co., of Covina, for authority to sell $50,000 worth of first refunding 6 per cent gold bonds to refund underlying 5 per cent bonds.

February 17: Application filed by the Chileano Telephone Co. serving rural communities west of Petaluma, for authority to increase its charges to subscribers from $6 to $10 a year, together with a commission of 10 per cent for collection of tolls and switching charges. Each subscriber on the system owns his own telephone.

DISTRICT OF COLUMBIA.

February 15: The Chesapeake & Potomac Telephone Co. authorized to continue in effect present schedules of rates, which were to expire by limitation on February 28, for an indefinite period.

ILLINOIS.

February 21: Hearing at Springfield on application of the Peoples Mutual Telephone Co. for authority to issue $3,100 worth of its mortgage bonds.

February 23: Hearing at Springfield in the matter of proposed increase in rates by the Murphysboro Telephone Co. in Murphysboro and 23 other municipalities; protests filed by mayor and citizens of Carbondale and the city of Anna against service; supplemental application filed by the telephone company for an extension of time within which to comply with order of the commission.

February 23: Hearing at Springfield on application of the Industry Telephone Co. for authority to increase its rates for telephone service in Littleton and Industry.

INDIANA.

February: Petition filed by the McCordsville Telephone Co., of McCordsville, for authority to increase its rates. Under the present arrangements each subscriber pays $5 per year and must be a stockholder, according to the by-laws of the company. Authority is asked to increase the foregoing rate to $6 per year.

The 1922 Business Decalogue.

The National Association of Credit Men held its annual convention at Chicago last week, and its secretary, J. H. Tregoe, prepared ten commandments which were submitted for the guidance of business men during the coming year.

Their observance, it is believed, will aid in stimulating prosperity in this country. Read them:

"Buy what thou needest, but buy wisely.

"Speculate not in low-priced commodities.

"Prevent unemployment by keeping your particular cog of the wheels of industry constantly functioning.

"Honor the thrifty and saving man.

"Be punctual in the delivery of orders and time of execution that thy days may be long in the business world.

"Love thy nation and its traditions—be a 'bull' on America.

"Demand from thine representatives who are in Washington that they enforce economy in the administration of government finances.

"Stabilize exchange by releasing gold reserves to Europe.

"Bring about a deflation of credit and currency through free movement of commerce.

"Fear not, but with confidence and steadfastness of purpose 'go forward'; even as thine armies in the great war shouted, 'Let's go!'"

MISSOURI.

February 7: Temporary schedule of rates granted the Versailles Telephone Co., of Versailles, on January 11, 1921, authorized as the maximum rates to be charged in a supplemental order issued on this date.

February 13: Temporary rates allowed the Hayside Telephone Line, of Bernie, on December 15, 1919, and the Bolivar Telephone Co., of Bolivar, on December 26, 1919, authorized as the maximum rates to be charged, in supplemental orders issued on this date.

February 13: The Kansas City Telephone Co. authorized to continue in effect present schedule of temporary rates at its Fairmont exchange for a further period of 11 months, from March 1, 1922, to February 1, 1923.

February 14: Supplemental order issued authorizing the Liberal Mutual Telephone Co., of Liberal, to continue in effect present schedule of temporary rates approved on December 20, 1919, as maximum lawful rates, unless otherwise ordered by the commission.

February 16: Order issued approving sale of the interest of H. R. Southwick, deceased, to Joseph Bevan and to the sale by Joseph Bevan to John Bevan of the telephone plant, system, and exchange of the Macon & Chariton Telephone Co.

NEBRASKA.

February 14: Application of the Farmers' Home Telephone Co., of Shelton and Gibbon, for permission to continue indefinite collection of present schedule of charges, found to be reasonable and necessary, and granted. Dated back to take effect as of February 1, 1922.

February 15: Application of the Havana Telephone Co. for authority to continue its present schedule of rates and to add 25 cents a month thereto where prepayment is not made in accordance with its rules, found to be reasonable and necessary and granted.

February 15: Application filed by the Hay Springs Telephone Co. for permission to establish joint user service.

NEW YORK.

February 20: Hearing at New York City on motion of the commission as to rates, etc., of the New York Telephone Co.

March 8: Hearings at New York City on complaint of the city of New York against existing rates of the New York Telephone Co. in that city continued to this date.

NORTH DAKOTA.

February 14: Application filed by the Williams County Mutual Telephone Co. for authority to increase its toll rates.

February 20: Hearing at Park River on complaint of the Park River Telephone Co., against the Farmers Mutual Telephone Co. alleging duplication of lines, service, etc.

WISCONSIN.

February 13: The Commonwealth Telephone Co., of Madison, authorized to issue $24,500 worth of first mortgage bonds under certain terms and conditions, outlined in the order.

February 15: In the matter of complaint filed by A. G. Becker against the Allenton-Kohlsville Telephone Co. and the Washington County Telephone Co.; order issued directing the two companies to establish and maintain a direct physical connection between their respective exchanges at Allenton and Slinger.

March 7: Hearing at Madison on application of the La Farge Telephone Co. for authority to increase its toll rates between La Farge and Cashton. U.2647.

WISCONSIN PLANS SERVICE CORPORATION.

(*Continued from page* 16.)

"does not go out and plan for conditions in building, leaving it up to the workmen. In a few years the line will not carry the load and has to be rebuilt. Then, again, a better class of line is put up than conditions warrant."

In Mr. Blackwood's opinion, proper guying is a big item, for if a line corner gets away it is practically impossible to get it back without rebuilding. "A common fault," said Mr. Blackwood, "is that anchors are placed too close to the poles. Get far enough away so that the pole will not buckle."

The speaker advocated that substations should not be installed without protection as a troubleman will bring in a set which has a open ringer and in a short time a number of sets are on hand minus parts —and these sets should be in service. All line connections should be soldered and substations and batteries inspected regularly, especially in rural districts.

"Troublemen without restrictions will do things their own way. Give specific instructions to clear trouble thoroughly. Then there will be but three or four a day instead of having a number of cases of the same trouble."

In closing Mr. Blackwood said, "You can't give service if the plant is not kept up. Get together with your men and plan things out."

After a brief discussion the meeting adjourned.

The Thursday Morning Meeting.

At the meeting on Thursday morning, Paul J. Weirich, of Monroe, Wis., opened the discussion on wireless telephony. He stated that radio is now in a nebulous state and the laws lack grouping and the relationship of one law to another. He advocated telephone men getting into the scientific, political and economic sides of radio and suggested that each obtain copies of the radio laws of the United States by writing to the Superintendent of Documents, Government Printing Office, Washington, D. C., enclosing 15 cents, not in stamps.

Mr. Weirich then presented Professor E. B. Terry, of the University of Wisconsin, stating that Professor Terry has a knowledge of the radio that is not excelled by many and that he is recognized as a leading authority on radio.

Professor Terry gave a most interesting and practical blackboard talk on the fundamentals of radio equipment, explaining the purpose and action of the vacuum tube and other parts of the sending and receiving equipment. He described the equipment at the University of Wisconsin at Madison and told of the use made of it in broadcasting various reports.

Fears as to radio displacing wire lines were characterized by Professor Terry as entirely ungrounded, for the radio will never displace the telephone in ordinary use, but it can greatly co-operate with it. The problems of interference are too great for its use around town and in Professor Terry's opinion, radio and wire services are bound to develop side by side and each supplement the other.

In enumerating the possibilities of radio in connection with wire systems, Professor Terry brought out these uses:

First, a connection between wire and radio to permit the talking to persons, trains or on ships.

Second, doing away with the maintenance of very expensive wire lines such as over mountains, swamps, etc.

Third, co-operation so the telephone companies can get information to their rural subscribers, such as news, market and weather reports, as all individuals will not have wireless receiving sets.

Fourth, a possibility of the future is that radio may replace some of the longer hauls of overland wire lines.

Secretary John A. Pratt was then called upon by President Gallon to speak as to the future of the association. Mr. Pratt stated that he had made a study of 22 companies in the past year and five of them had been started in better methods of accounting and doing business. He stated that there are too many telephone men who are making excuses for being in the business and that the telephone companies are entitled to pay for the service rendered just as much as any business.

There should be efforts made to bring about a change of mind so that the telephone business will be as good as any in the community and the telephone men should make no excuses for being in it.

Secretary Pratt presented some comparative figures of 49 companies for 1915 and 1920. He showed that these 49 companies had a plant value of $2,600,000 in 1915 and $3,589,000 in 1920. The 1915 revenues were $748,000 and in 1920 $1,220,633. This increase, he declared, was proper, and then proceeded to analyze it on a per station basis.

In 1915 the income per station was $16.35; 1920, $19.92, while the average costs in 1915 were $12.48 per station and $16.94 in 1920. There was a gain on 31,000 subscribers in the five-year period.

In this period the percentages were: Plant investment, 37 per cent increase; operating revenues, 63 per cent increase; operating expenses, 79.8 per cent increase; and telephone increase, 34 per cent.

Continuing, Mr. Pratt stated that in 1915 one company spent $7.39 per station for operating expenses and in 1920 $13.04. Another company in 1915 spent $9.90 per station for operating expenses and in 1920, $16.26. Still another company in 1915 spent $13.09 and in 1920, $13.40. Another company showed figures of $13.74 and $15.33. These latter companies, Mr. Pratt stated, had not been affected by the minimum wage law to any large extent, owing to local conditions.

The greatest increase for operating expenses per station was from $7.94 in 1915 to $19.08 in 1920.

In explanation of the differences in the variation of costs of these companies, Mr. Pratt stated that one of the companies was a co-operative company on a small capital stock issue and its capital investment was probably one-half of the average of the companies, while the depreciation was less than one-half of its total plant value. The factor of depreciation, Mr. Pratt said, is one of the vital problems today and the least appreciated by the companies.

Secretary Pratt then put up to the convention a plan of making a budget so that companies asking for service can obtain it. He advocated a classification of exchanges so as to work out a budget of $10,000. With this budget a real service can be provided the companies and Mr. Pratt predicted it could be sold to 90 per cent of the companies in the state. He suggested action be taken to appoint an organization committee to work out plans.

There was a lively discussion for the plan of extending the work of the association to provide a real service seized the imagination of those present.

H. A. Price, of Markesan, declared that the companies in the state are not in a position to handle things to get the best results from the commission or from subscribers. He was in favor of some sort of a service bureau where expert advice could be obtained.

F. H. Runkel told of the hard work that the association officers have done. He expressed the belief that the Wisconsin companies will have to have a service bureau in the near future and that the association can provide it quicker than any other organization.

Thomas Sanderson, of the Peoples Telephone Co., Rio, favored the budget plan with specified dues according to classification of exchanges.

Arthur Taylor, of Rhinelander, suggested the forming of an organization and its incorporation with the stock owned by the members of the association. Then as services were furnished, the money would come into the treasury to be repaid to the ones who have furnished it.

A standing vote was taken to determine the sentiment as to the plan of an incorporated organization to provide the service bureau and it showed a great preponderance in its favor, practically everyone in the hall arising.

President Gallon then read the report of the nominating committee presenting the names of H. A. Price, of Markesan, and F. H. Runkel, of Portage, as directors to fill the two vacancies on the board. Upon motion, the report was accepted and the secretary was instructed to cast a

ballot for the election of the nominees. The session then adjourned.

The Concluding Session.

During the noon recess the board of directors held a meeting and elected officers as follows: President, Arthur Taylor, of Rhinelander; vice-president, H. A. Price, of Markesan; treasurer, W. F. Goodrich, of LaCrosse; and secretary, J. A. Pratt, of Madison. The announcement of the results of the election was made by Mr. Gallon, immediately upon the convening of the Thursday afternoon session. President-elect Taylor then took the chair, making a brief talk in which he expressed appreciation of the importance of the position which had been thrust upon him.

The subject of "Physical Valuations" was presented by W. A. Bauker, of the American Appraisal Co. Mr. Bauker made a most interesting address bringing out the development of an organization appraisal as contrasted with an opinion valuation. He laid stress upon the importance of obtaining facts and then took up a discussion of going value and depreciation. He pointed out that a telephone property is different from other utilities and that there is probably no other business in which inadequacy and obsolescence enter so much as in the telephone business.

Mr. Bauker outlined the procedure of making a physical inventory and stated that life tables, local conditions, and obsolescence had to be considered for each item of each class of equipment. This is not so much of a job as would appear, for the work of valuation is carefully subdivided and, therefore, goes along very rapidly.

J. M. Storkerson, of the LaCrosse Telephone Co., presented a blackboard and chart talk on the subject "Underground Construction for Small Exchanges." Mr. Storkerson first had several managers describe their experience with underground and give costs, in order to show that the underground plant is entirely feasible, not only from a maintenance viewpoint but also from a cost standpoint.

In Prairie du Chien, cable was placed underground for about 17 blocks and the company there has always been glad that it was done. The underground was placed in 1915 at a cost of 18 cents per foot of fibre conduit in concrete, with manholes at $25. In Reedsburg in 1920 cable was placed underground at a cost of 30 and 31 cents per duct foot, including the manholes.

Mr. Storkerson declared that on ordinary streets it is cheaper to put in underground than aerial cable and that it is cheaper to maintain. He described and illustrated, by means of a cigar box, the building of a manhole with concrete. The blackboard was used to bring out points in the laying of the ducts and many questions were answered by the drawing of diagrams on the blackboard.

Mr. Storkerson declared that he would not put up even a five-pair cable in the air, except for temporary purposes and he convinced all of those in attendance by the practicability of his arguments.

President Taylor then brought up the matter of the service organization. P. J. Weirich, of Monroe, moved that a committee be appointed to draw up concrete suggestions and that the board of directors call a conference at Madison within 30 days to take some action relative to the service organization.

Upon being seconded, Mr. Weirich's motion was unanimously carried. President Taylor announced that the committee would be appointed later. Any suggestions of members as to the organization will be welcomed by the directors or the committee.

A resolution was then presented by P. J. Weirich that the association be represented at Washington at the radio conference on February 27 in order to protect the interests of telephone companies so that no action would be taken that will interfere with any services which the wire companies may be able to furnish in conjunction with the radio. This resolution was adopted.

After some miscellaneous discussion the convention was declared adjourned by President Taylor.

1922.

The New Year will identify by searching test those in business who develop the keenest sense of values; who meet competition most intelligently; who offer the best product or the most efficient service at the lowest cost; who make wisest use of the principles of thrift and economy; who strive most earnestly to build up good will by fair dealing; who excel in solving the problems of the present through understanding of the lessons of the past; and those, above all, who hold the highest degree of confidence in the basic stability of this country.

The contest is open to all. For the institutions and individuals proved worthy, there will be the reward of progress.—Finance & Industry, December 31, 1921.

London to Have Largest Telephone Exchange in Europe.

Plans are under way for the erection of a new telephone exchange in London, England, which will be the largest of any in Europe, according to a recent issue of The Electrical Review. The site has already been acquired at a cost of some £50,000, but the date when building operations will be begun has not yet been decided.

The plans provide for probable developments in the next 15 years, but do not state how much of the exchange will be automatic. The new exchange is to be known as a three-unit one, and whereas the largest existing exchanges in London have a capacity for 10,000 subscribers, the new one is to serve 30,000. As no single exchange consists of more than 10,000 lines, the new exchange is to have three separate names, each with 10,000 lines.

Changes in Officers of the Illinois Bell Telephone Co.

At a meeting of the directors of the Illinois Bell Telephone Co. in Chicago, February 21, the board accepted the resignation of Edgar S. Bloom as vice-president.

Mr. Bloom, who has had a wide experience as an operating official of Bell companies throughout the United States, was recently elected a vice-president of the American Telephone & Telegraph Co.

The meeting of the board, which was for the purpose of organization, was the first one held since the annual meeting of stockholders. The following were elected as officers of the company:

B. E. Sunny, chairman of the board. For many years Mr. Sunny was president of the company.

W. R. Abbott, president. Mr. Abbott formerly was vice-president and general manager.

F. O. Hale, vice-president and general manager. He was formerly chief engineer.

After the meeting Mr. Abbott announced that G. W. McRae had been appointed chief engineer, and H. W. Bang, formerly assistant to the vice-president, assistant to the president.

Mr. Bang has been with the Illinois Bell Telephone Co. for the last 12 years. He is a graduate of Lewis Institute. For the past few years he has been the personnel officer of the company.

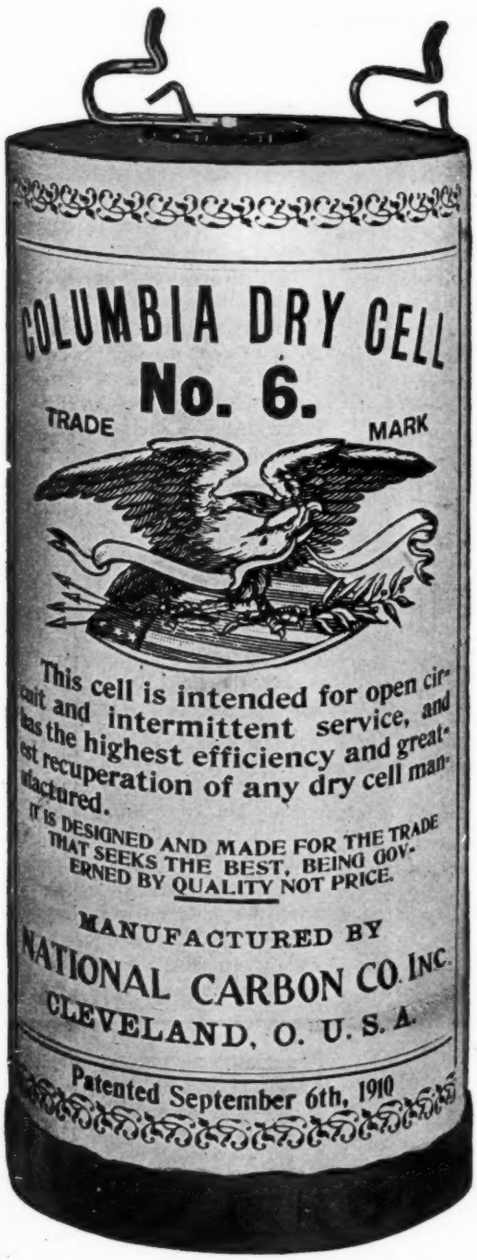
The other officers were re-elected and the changes became effective at once.

New Central Office Installed in the Bronx (N. Y.).

A new telephone central office for the Bronx, which has been designated "Underhill," was placed in service on February 18 by the New York Telephone Co., in a recently constructed building. The new office and the present Westchester central office will serve jointly the territory hitherto served by the Westchester central office alone.

Several hundred new telephone lines were placed in service with the Underhill switchboard, in addition to which lines were transferred to the new office from the Westchester switchboard.

The name "Underhill" was chosen on account of its having local significance, and because it meets the intricate requirements of both machine switching and manual methods of telephone operation.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Personal and Biographical Notes

Walter Thorgrimson, another of the group of alert and thoroughly trained telephone men evolved by the Lincoln Telephone & Telegraph Co., Lincoln, Neb., has broken home ties. He has resigned

Commercial Engineer Thorgrimson of the Lincoln Telephone & Telegraph Co. Has Joined the Bell's Omaha Staff.

from his position of commercial engineer of the Lincoln company, and has taken a place as an assistant in the office at Omaha of the general commercial superintendent, Lloyd B. Wilson, of the Northwestern Bell Telephone Co. He is the third of this group to depart within the year. George K. Gann, general traffic superintendent, left to join the Tri-City company at St. Paul and General Manager L. E. Hurtz severed partial connection with the company in order to look after large private interests of his family.

Mr. Thorgrimson began his telephone career with the Bell company when it had an exchange in Lincoln in 1909, and when the Lincoln company took over the property in 1912 he went with it. For several years Mr. Thorgrimson was commercial manager for the central district, which included the company's largest exchange, Lincoln, and for the past two years has been commercial engineer. He is one of the best-known and best-liked telephone men in the state, and his old employers let him go only because they were willing that he should have a better opportunity to go still higher.

Commercial Superintendent W. E. Bell said, in the letter announcing the change, that the company "regrets Mr. Thorgrimson's departure from the working forces, but his long and satisfactory period of service bespeaks for him still further advancement in the enlarged field of labor which he is entering."

Milton Barratt, at present commercial manager for the central district of the Lincoln Telephone & Telegraph Co., will assume the duties of commercial engineer in addition to his other work for a time. Mr. Barratt has been with the company for a number of years, coming steadily up the line of promotion, and is one of the valued members of the official staff.

Lyle P. Young has been appointed district manager by the Lincoln (Neb.) Telephone & Telegraph Co., with headquarters at Nebraska City, and will have jurisdiction over the counties of Otoe, Cass, Nemaha and Richardson. He has until lately been district traffic manager at Beatrice, and before that was manager at York. He is regarded as one of the most valuable men in the company's staff, and has had rapid promotion.

The company has just completed a new building at Nebraska City, declared to be one of the finest small city exchanges in the country, and the cutting over was made quite a ceremony. One of the men who "touched the button" for the event was W. A. Cotton, president of the first telephone company ever organized in the city. This was in 1883, and the company served 25 subscribers. It cost the company $1,850, and in a few years, after the stockholders had paid themselves back 80 per cent of the cost, it was sold to the Bell for $4,500, and in 1912 became a part of the Lincoln company's property.

Homer Taylor has been appointed manager of the Greenville Telephone Co., of Greenville, Texas. Mr. Taylor is a resident of Greenville and has been connected with the company for many years.

E. J. Ledvina, formerly manager of the Wisconsin Telephone Co.'s Shawano, Wis. exchange, has been transferred to Oshkosh to act as assistant to A. C. Gallagher, manager of the company's exchange there for 31 years. Mr. Ledvina has been in the company's employ for 16 years and for the last 12 has been manager of the Shawano exchange.

Dee Mitchell, formerly manager of the Cumberland Telephone & Telegraph Co.'s Murray, Ky. exchange has accepted a position as assistant district manager at Paducah. Mr. Mitchell is succeeded at Murray by Charles Warren, of Wickliffe.

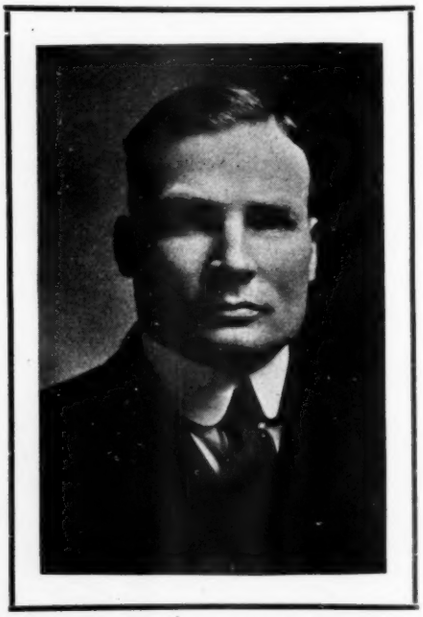
Obituary.

Hayden W. Head, president of the Grayson, North Texas, Denison, and Peoples Home telephone companies and vice-president of the Bonham Telephone Co., of Sherman, Texas, passed away at his home Tuesday evening, February 14, following an illness of 10 days with pneumonia.

Mr. Head's interest in the telephone business dates back to 1904 at which time he made a small investment in the North Texas Telephone Co. Soon after he was elected a member of the board of directors and later became financially interested in other telephone companies. Recognition of his business ability was made by his election to the presidency of these companies, which position he held up to the time of his death.

Born in Sherman, May 9, 1882, Mr. Head was not 40 years of age when he died. He attended the public schools of that city and after completing his college preparatory work at Captain Le Telier's School for Boys, entered the Austin College of Sherman, graduating with honors in 1901.

Following his return from Columbia University in 1904, where he took a law course, Mr. Head immediately commenced the practice of law in his father's office, under the law firm of Head, Dillard & Head. As a lawyer he took high rank from the first and won the recognition of some of the largest interests of the state with whom he soon became associated as corporation counsel. At the time of his



The Late Hayden W. Head Was One of Texas' Leading Young Business Men.

death this influence was being broadened daily through the weight of his knowledge and training.

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its organizers in 1904. He was also active vice-president of the Merchants & Planters National Bank, of Sherman, being elected to this position in July, 1920.

Mr. Head was held in high esteem by his fellow citizens and his death is regarded as a distinct loss to the entire community, for he was actively engaged in almost every movement for the upbuilding and betterment of towns in that vicinity. In fact, it is said few movements for the good of Sherman and Grayson counties were carried on during a number of years past without his active support and assistance.

All of Sherman paid tribute to his memory when, during the hour of the funeral services, business of the city was practically suspended. Business houses which did not close their doors entirely, ceased operation for a period of a few minutes. The telephone lines were silent for a period of two minutes on the afternoon of the funeral.

Hundreds of messages of condolence and sympathy were received by the family on Wednesday from his many friends in all parts of the country. Those surviving are his wife, three children, his father, and a brother and sister.

Record of Telephone Patents

1,396,930. November 15, 1921; filed December 27, 1917. SYSTEM FOR THE EQUALIZATION OF TRANSMISSION LINES; 20 claims; B. Gherardi, Bayhead, N. J.; assigned to American Telephone & Telegraph Co. Greater transmission of voice currents over short lines than over long lines.

1,397,034. November 15, 1921; filed July 19, 1919. TELEPHONE EXCHANGE SYSTEM; 14 claims; H. P. Clausen, Mount Vernon, N. Y.; assigned to Western Electric Co. Automatically actuated audible common signaling devices, after the operation of the individual signaling device of a selected line.

1,397,137. November 15, 1921; filed October 5, 1918. PORTABLE TELEPHONE APPARATUS; 10 claims; A. Miclaush, Mattoon, Ill. Parallel or series connection of receiver coils.

1,397,687. November 22, 1921, filed September 26, 1917. TRANSMITTER AND CIRCUITS THEREFORE; 25 claims; N. H. Holland, West Orange, N. J.; assigned to New Jersey Patent Co., West Orange. Maximum sensitiveness.

1,397,862. November 22, 1921; filed November 26, 1917. TRANSMISSION SYSTEM; 17 claims; A. L. Fitch, East Orange, N. J.; assigned to Western Electric Co. Condenser transmitter with an electron discharge device.

1,397,975. November 22, 1921; filed February 19, 1920. ELECTRICAL TESTING SYSTEM; four claims; G. W. Kuhn, of Brooklyn, N. Y.; assigned to American Telephone & Telegraph Co. Association of cord circuit with testing circuit.

1,397,991. November 22, 1921; filed October 9, 1919. MESSAGE-REGISTERING SYSTEM; four claims; G. K. Thompson, Maplewood, N. J.; assigned to American Telephone & Telegraph Co. Describes method to restore registering device to its normal unoperated position and to indicate to the operator that the registering device has registered.

1,398,029. November 22, 1921; filed April 20, 1920. TELEPHONE ATTACHMENT; one claim; J. P. Lee, Pleasantville, N. Y. An antiseptic wafer attached to the mouthpiece of a transmitter.

1,398,287. November 29, 1921; filed January 15, 1920. SELECTIVE SIGNALING SYSTEM; four claims; G. K. Thompson, Maplewood, N. J.; assigned to American Telephone & Telegraph Co. Means for associating with the line, current of one frequency or another, having a larger ordinate in one direction than in the other.

1,398,391. November 29, 1921; filed July 28, 1919. AUTOMATIC TELEPHONE SYSTEM; 11 claims; W. T. Powell, Rochester, N. Y.; assigned to Stromberg-Carlson Telephone Mfg. Co. A service charging device.

1,398,589. November 29, 1921; filed November 19, 1920; TELEPHONE EXCHANGE SYSTEM; three claims; C. B. Fowler, New York; assigned to Western Electric Co. Cord circuit and supervisory signaling device.

Printed copies of patents may be secured by addressing the Commissioner of Patents, Washington, D. C., enclosing 10 cents for each copy.

1,398,665. November 29, 1921; filed January 8, 1920. THERMIONIC AMPLIFIER; 10 claims; H. D. Arnold, Maplewood, N. J.; assigned to Western Electric Co. Anode is relatively widely spaced from cathode.

1,398,687. November 29, 1921; filed February 19, 1920. THERMOPHONE; five claims; B. D. Gray, Greenwich, Conn.; assigned to American Thermophone Co. Segment construction.

1,398,728. November 29, 1921; filed May 31, 1919. VOICE-CURRENT TELEPHONE REPEATER SYSTEM; two claims; G. H. Kuhl, Chicago; assigned to Automatic Electric Co. Amplifier controlled by voice-current relay.

1,399,066. December 6, 1921; filed September 20, 1915. TELEPHONE EXCHANGE SYSTEM; 12 claims; F. Lubberger, Berlin-Halensee and Walter Pinell, Siemensstadt (near Berlin, Germany); assigned to Western Electric Co. Automatic system.

1,399,083. December 6, 1921; filed April 21, 1921. TELEPHONE MUFFLER; 11 claims; L. S. Scher, New York. Mouthpiece attachment.

1,399,226. December 6, 1921; filed May 14, 1919. ELECTROTHERMAL RELAY; 11 claims; W. A. Rhodes, New York; assigned to American Telephone & Telegraph Co. A time element translating device.

1,399,268. December 6, 1921; filed June 13, 1917. TELEPHONE APPARATUS; one claim; F. P. Mansbendel, Brooklyn, N. Y.; assigned to Ultra Earphone Co., New York. Receiver.

1,399,695. December 6, 1921; filed November 6, 1919. ELECTRICAL TESTING CIRCUITS; six claims; C. S. Demarest, New York; assigned to American Telephone & Telegraph Co. Connection of test circuit with meter and signaling circuit.

1,399,728. December 13, 1921; filed July 26, 1919. AUTOMATIC SWITCH FOR TELEPHONE EXCHANGE SYSTEMS; four claims; A. H. Adams, Galion, Ohio; assigned to Western Electric Co. Rotary switch construction.

1,399,775. December 13, 1921; filed February 1, 1918. COMMON BATTERY SUBSTATION; 32 claims; K. S. Johnson, Jersey City, N. J.; assigned to Western Electric Co. An anti-side tone substation circuit.

1,399,998. December 13, 1921; filed November 25, 1919. TELEPHONE SYSTEM; four claims; A. Raynsford, New York; assigned to Western Electric Co. Combination of link circuit with cord circuits and signals.

1,400,039. December 13, 1921; filed December 27, 1918. SIGNALING SYSTEM; seven claims; H. C. Egerton, Ridgewood, N. J.; assigned to Western Electric Co. A method of maintaining synchronism between two rotatable members operatively interconnected by a transmission line.

1,400,050. December 13, 1921; filed September 5, 1918. SIGNALING SYSTEM; two claims; B. B. Grace, Upminster, England; assigned to Western Electric Co. A signaling device with a vibratory diaphragm member.

1,400,075. December 13, 1921; filed August 11, 1917. TELEPHONE EXCHANGE SYSTEM; four claims; C. W. Keckler, Newark, N. J.; assigned to Western Electric Co. Signaling between central offices.

1,400,076. December 13, 1921; filed December 16, 1919. TELEPHONE SIGNALING SYSTEM; two claims; C. W. Keckler, Newark, N. J.; assigned to Western Electric Co. Operation of slow-acting relay in selective signaling.

1,400,103. December 13, 1921; filed September 4, 1919. ARTIFICIAL BUSY CIRCUITS; 10 claims; D. M. Taggart, East Orange, N. J.; assigned to Western Electric Co. Interoffice telephone exchange system.

1,400,120. December 13, 1921; filed April 17, 1918. TELEPHONE EXCHANGE SYSTEM; 40 claims; S. B. Williams, Jr., Brooklyn, N. Y.; assigned to Western Electric Co. Operating means for automatic switches.

1,400,181. December 13, 1921; filed October 23, 1918. SEMI-AUTOMATIC TELEPHONE EXCHANGE SYSTEM; six claims; Lipa Polinkowsky, London, England; assigned to Western Electric Co. Control of all states of the establishment of connections located at operators' positions.

1,400,187. December 13, 1921; filed March 22, 1921. SWINGABLE TELEPHONE; five claims; J. E. Thomas, Sawtelle, Calif. A desk telephone bracket.

1,400,189. December 13, 1921; filed October 16, 1917. MEANS FOR CONTROLLING REPEATER CIRCUITS; 18 claims; J. F. Toomey, New York; assigned to American Telephone & Telegraph Co. A potentiometer for controlling the amplification of amplifier in a signaling system.

1,400,283. December 13, 1921; filed September 25, 1918. SUBMARINE TELEPHONE TRANSMITTER; three claims; H. R. Gilson, New Rochelle, N. Y.; assigned to The Mechanical Rubber Co., New Jersey. Transmitter enclosed in a sound box.

1,400,334. December 13, 1921; filed March 10, 1921. GUARD FOR TELEPHONE TRANSMITTERS AND THE LIKE; three claims; G. H. Weinrich, Chicago. A sanitary guard for the mouthpiece.

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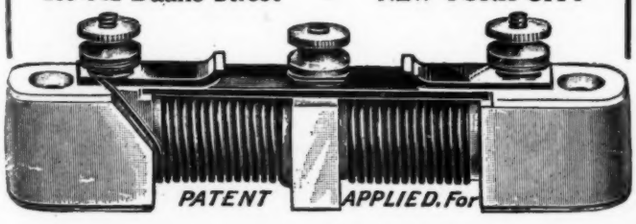

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1,400,583. December 20, 1921; filed April 18, 1918. TELEPHONE SYSTEM; four claims; J. F. Toomey, New York; assigned to American Telephone & Telegraph Co. Trunk transmission line terminating at a central office in a plurality of sets of switching terminals located at different switchboard positions.

1,400,590. December 20, 1921; filed November 29, 1907. SELECTIVE TELEPHONE SYSTEM; 86 claims; A. H. Dyson, Chicago; assigned to Kellogg Switchboard & Supply Co. A semi-automatic telephone system with trunk lines between branch and main exchanges.

1,400,732. December 20, 1921; filed May 12, 1919. SIGNALING SYSTEM; 10 claims; C. S. Demarest, Brooklyn, N. Y.; assigned to American Telephone & Telegraph Co. A simplex circuit associated with a trunk circuit extending from a first to a second switchboard.

1,401,121. December 27, 1921; filed May 24, 1918. MOUNTING FOR VACUUM TUBES; three claims; R. M. Allen, East Orange, N. J.; assigned to Western Electric Co. Mounting for preventing external vibrations from appreciably changing from the space relations of the electrodes.

1,401,217. December 27, 1921; filed May 17, 1918. SWITCHBOARD PLUG; six claims; A. H. Weiss, Wilmette, Ill.; assigned to Kellogg Switchboard & Supply Co. Details of construction.

1,401,531. December 27, 1921; filed September 1, 1921. CABLE AND TELEPHONE WIRE CONTAINING RAIL; four claims; F. Gaspar, Cupar, Saskatchewan, Canada. Track rail having a thickened web formed with a longitudinal recess for wires and a supplementary web element covering the recess.

1,401,544. December 27, 1921; filed November 1, 1919. TELEPHONE EXCHANGE SYSTEM; 11 claims; G. A. E. Lundell, Chicago; assigned to Western Electric Co. Trunking between switchboards with automatic selecting means for seizing an idle trunk.

1,401,564. December 27, 1921; filed September 3, 1918. TETRAHEDRONAL MAGNETIC UNIT; 16 claims; J. B. Speed, New York; assigned to Western Electric Co. A magnet core comprising six limbs outlining a tetrahedron.

1,401,753. December 27, 1921; filed January 29, 1921. TELEPHONE RECEIVER; seven claims; Gaston Boissonnault, Hewlett, N. Y. A sound amplifier both detachably and interchangeably engageable with the supporting neck of a receiver.

1,401,754. December 27, 1921; filed July 22, 1921. TELEPHONE TRANSMITTER; four claims; Gaston Boissonnault, Hewlett, N. Y.; assigned to G. Boissonnault Co., New York. Telephone transmitter provided with a projecting neck and a perforated plate having screw threaded connection with the neck.

Condensed Telephone News

Officers of Companies Are Urgently Requested to Forward to Us Promptly All Financial and Other Statements as Soon as Issued and Any Items Relating to Construction, Rebuilding, or Changes in Their Plants and Systems

New Telephone Companies and Incorporations.

ORANGEVILLE, PA.—The Orangeville Rural Telephone Co. has been incorporated with $10,000 capital stock by C. W. Hess.

Construction.

SHREVEPORT, LA.—Improvements recently completed to the building and exchange equipment of the Shreveport Home Telephone Co. will be followed by the installation of additional new outside equipment, according to H. L. Dillon, of Toledo, Ohio, general manager. A new board capable of carrying 4,000 telephones and costing about $35,000, has been placed and is now in use. Steel lockers for employes, and a larger restroom are recent improvements

ARDMORE, OKLA.—Completion of improvements in this city at an expenditure of $100,000 by the Southwestern Bell Telephone Co. will take place April 30 of this year, according to Floyd Clark, district manager. The work was started December 1, 1921, and includes laying of conduits, construction of additional poles, new cable lines, and like work.

HUNTINGTON, W. VA.—Plans are being made by the Chesapeake & Potomac Telephone Co. for the expenditure of $400,000 on improvements to its plant and lines

Elections.

PRINCETON, ONTARIO, CANADA—The annual meeting of the Princeton & Drumbo Telephone Co. was held recently and officers and directors re-elected for the ensuing year as follows: President, W. Wood; vice-president, E. Harley; secretary and manager, W. P. Blackmore; directors, G. Shaw, R. Hewitt, MacKenzie Hall, C. P. Cowan, William Barker, Walter Kipp and Thomas Starr.

ATWOOD, ILL.—At the organization meeting of directors of the Atwood Mutual Telephone Co., C. J. Gross was elected president; O. A. Beaty, vice-president; S. C. Rich, treasurer; and Alexander Bercher, secretary and manager.

BENTONVILLE, ARK.—The Decatur Telephone Co. recently re-elected W. H. Box, president, and Charles Gordon, secretary-treasurer.

HILLSBORO, ILL.—Stockholders of the Montgomery County Telephone & Telegraph Co. held their annual meeting here recently and re-elected the old board of directors, consisting of A. M. Howell, J. R. Challacombe, J. H. Ward, J. M. Finley, and C. W. Bliss. The new board then met and chose A. M. Howell, president and manager; J. H. Ward, vice-president; J. M. Finley, superintendent of construction; and Miss M. G. Short, secretary-treasurer.

TOULON, ILL.—A meeting of stockholders of the Stark County Telephone Co. was held recently and four directors were re-elected. They were: W. F. Price, of Toulon; J. W. Walters and J. T. Rogers, of Wyoming; and J. H. Duncan, of Elmira. The hold-over directors are C. P. Dewey and J. H. Wright, of Toulon; W. R. Sandham, A. B. Hoff, and Arthur Walters, of Wyoming; Joseph Fuller and William H. Jackson, of Elmira. The old officers were re-elected as follows: President, W. P. Price; manager east side, A. B. Hoff; manager west side, W. F. Price; secretary, W. R. Sandham; and treasurer, C. P. Dewey.

CALAMUS, IOWA—The Farmers' & Business Men's Mutual Telephone Co.'s annual meeting was held here recently and H. Christiansen elected president; William Hoker, of Wheatland, vice-president; Wm. F. Siegmund, treasurer; and Carl Lohmann, of Wheatland, secretary.

EXLINE, IOWA—Officers of the Caldwell Mutual Telephone Co. elected at the company's annual meeting held recently are: President, Lars Johnson; vice-president, Oscar Anderson; secretary and treasurer, J. D. Rowan. The directors are: Clarence Hughes, Frank Bratschi, J. D. Rowan, Lars Johnson and Oscar Anderson.

PEWAUKEE, WIS.—The directors and stockholders of the Pewaukee-Sussex Telephone Co. held their annual meeting recently and re-elected the old officers and directors. The officers are: President, F. J. Hodgson; vice-president, A. W. Hodgson; treasurer, H. J. Hintz; and secretary and manager, Edwin Haskins.

WALWORTH, WIS.—W. D. Church was re-elected president of the Walworth Telephone Co. at the recent annual election of officers; Stella M. Ellis, vice-president; M. M. Walters, secretary; and N. D. Maxon, auditor.

LAINGSBURG, MICH.—Stockholders of the Central Michigan Telephone Co. re-elected officers and directors recently as follows: President, H. H. Pulver; vice-president, C. C. Woodruff, of DeWitt; secretary, W. H Rowley; treasurer, W. H. Lacy; Chas. Diedrich, of East Lansing; W. J. Austin; and E. W. Morgan.

REDWOOD FALLS, MINN.—Annual meetings of both the Redwood Falls Electric Telephone Co. and the Redwood County Rural Telephone Co. were held recently. No changes were made in either board of directors and the following officers of the Redwood Falls Electric company continue their offices: Rud Stensvad, president; C. F. Galles, vice-president; A. D. McRae, secretary; and R. A. Cooper, treasurer. Wm. Kiel is the manager of this company. D. R. McCorquodale was re-elected president of the rural company; H. E. Dreyer, vice-president; A. M. Dennistoun, secretary; and J. L. Lindeman, treasurer. Bert Kleaver continues as manager of this company.

WISNER, NEB.—New officers and directors of the Cuming County Independent Telephone Co. are: President, O. R. Thompson; vice-president, Paul Wupper; secretary-manager, J. W. Richmond; treasurer, H. E. Leisy; directors, officers as given and Otto Glaubius.

MIDDLEBURG, N. Y.—At the annual meeting of the stockholders of the Middleburg Telephone Co., held recently, these directors were elected: Dr. C. S. Best, A. E. Vroman, A. E. Re Qua, Dow Beekman, J. L. Baker, I. B. Young, R. W. Cornell, W. E. Bassler, A. B. Engle, A. E. Becker, U. Best, G. L. Danforth, J. L. Engle, and G. B. Wheeler. The directors elected these officers: President, Dr C. S. Best; vice-president, J. L. Engle; secretary, Dow Beekman; and treasurer, G. B. Wheeler.

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BATTERIES

The fundamental value of Exide Batteries in the telephone field has been proven ever since the central energy system was established over 25 years ago. Today, the Exide is as modern in construction and design as the latest practical innovation in telephony; a fact attested by its almost universal use.

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Unequalled for telephone and bell wiring. The fibre insulation prevents troublesome short circuits and grounds.

4 Sizes Pat. Nov. 1908

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BOSTON, MASS.

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Mansbridge Type Condensers are Self-Sealing and cannot be internally short-circuited. If one is broken down by a lightning or high-tension discharge, or by mechanical damage, it automatically and instantaneously seals up, this being the unique and characteristic property of the metallized paper.

You can drive a pin right through a Mansbridge Condenser and the capacity and insulation will still be O. K.! Sounds impossible, but it's solid fact!

Complete Satisfaction

That's the reason why the Mansbridge Condenser has made good.

Mansbridge Condensers are More Reliable, Lighter, Smaller and no more Costly than those of the old fashioned solid foil type.

They are made under license by Western Electric Company, Ericsson Mfg. Co., Electric Specialty Co., Stromberg-Carlson Co., American Electric Co., and by numerous other licensees all over the world.

Insist upon having MANSBRIDGE CONDENSERS.

For full particulars and for terms of manufacturing license in U. S. A. and Canada apply:

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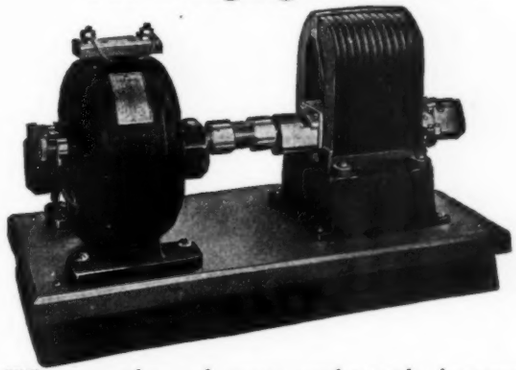

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Neither repair expense nor ringing troubles need exist when—

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are installed. Write us for prices—lately reduced.

THE HOLTZER-CABOT ELECTRIC COMPANY

Boston Detroit Philadelphia Baltimore
Chicago New York Minneapolis

Please tell the Advertiser you saw his Advertisement in TELEPHONY.

WOODRIDGE, N. Y.—Newly-elected directors of the Subscribers' Service Telephone Co. are: Dr. Philip H. Groginsky, Isadore Rothenberg, Max Podderesky, Louis Rosenblatt, Bernard Cohen, Morris Joffe, Nathan Nesselowitz, Hyman I. Persky, Samuel Seldin, Max Levine, and Morris Kauffman. The election of directors was followed by a meeting of the board at which Dr. Philip Groginsky was elected president; Hyman I. Persky, vice-president; Nathan Nesselowitz, treasurer; and Isadore Rothenberg, secretary and general manager.

MIDWAY (P. O. HARRISBURG) N. C.—The Forsyth-Davidson Telephone Co. held its yearly meeting recently and elected W. A. Crouse, president and Lewis Nifong secretary-treasurer.

EATON, OHIO—New directors of the Eaton Telephone Co. met recently and elected these officers for the ensuing year: O. A. Gale, president; C. B. Cokefair, vice-president; L. D. Lesh, secretary; and Elam Fisher, treasurer. The directors consist of the officers named and U. J. Poffenberger, T. W. Mitchell, and Homan Royer.

GRESHAM, ORE.—The annual meeting of the stockholders of the Multnomah & Clackamas County Mutual Telephone Co. was held recently and officers elected as follows: K. A. Miller, A. W. Metzger, W. A. Proctor, A. Dowsett, and John Sleret. Mr. Sleret was elected to fill the place of C. R. Keller, whose term has expired.

GAINESBORO, TENN.—At the annual meeting of the stockholders of the Home Telephone Co., officers elected for 1922 were: J. H. Jackson, president; Dr. R. C. Gaw, vice-president; G. B. Settle, secretary-treasurer; and W. M. Flynn, general manager. W. L. Gentry, R. A. Montgomery and the officers compose the directors of the company. This company recently purchased the property of the Gainesboro Telephone Co. and the work of moving the switchboard to the newly-acquired property is now in progress.

FREDERICKSBURG, TEXAS—The following were elected officers of the Willow City Telephone Co. for the ensuing year at the annual meeting of stockholders: Albert Moursund, president; Alfred Sagabiel, vice-president; and Reinbold Eckhardt, secretary-treasurer.

RIDGEFIELD, WASH.—Stockholders of the Ridgefield, Sara & Vancouver Farmers' Union Telephone Co. held their annual meeting recently and elected new officers for the ensuing year. Those chosen are: H. B. Apperson, of Ridgefield, president; J. W. Kingen, of Felida, vice-president; Judge Fred Herbert, of Ridgefield, secretary; and J. D. White, of Sara, treasurer. Directors are: Walter Jacobsen, F. E. G. Royle, George Armstrong, Sr., Edward Converse, and J. W. Kingen.

SAWYER, WIS.—Fred L. Anderson was elected president; Thomas Olson, vice-president; William Owen, secretary; A. H. Anderson, treasurer; and Ole Hendricks, a director of the Shiloh Telephone Co. at the company's annual meeting.

Miscellaneous.

WEST POINT, MISS.—The district traffic offices of the Cumberland Telephone Co. which have been located at Winona and Tupelo have been consolidated and are now located at West Point. A. M. Burrough, of Winona, will be the manager and Miss Bibb the secretary.

ELMORE CITY, OKLA.—J. P. Gipson, owner of the Elmore City Telephone Co. is extending his lines to Magnolia City. This will give Pauls Valley direct telephone connection with the southwest Garvin county oil fields.

NEWCASTLE, WYO.—Arrangements for the purchase of the Northern Wyoming Telephone Co. by the Mountain States Telephone & Telegraph Co., of Denver, Colo., have been completed.

OPPORTUNITIES

(Continued from Page 43)

WANTED—GENERAL MANAGER
711

Due to the many replies received in connection with the advertisement recently appearing in this column for a General Manager, it would be quite difficult to answer all of them, and this means is being used to advise the applicants that the position has been filled.

ADLETS

(Continued from Page 46)

NATIONAL PIPE & CABLE HANGER CO.
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Manufacturers of the National Cable Hanger

Kester Acid-Core Wire Solder
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Telephone, Telegraph, Light and Power Line Owners: We Have a Practical Device for Renewing the Life of Poles.

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A practical and explicit work on many problems of the magneto exchange.

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